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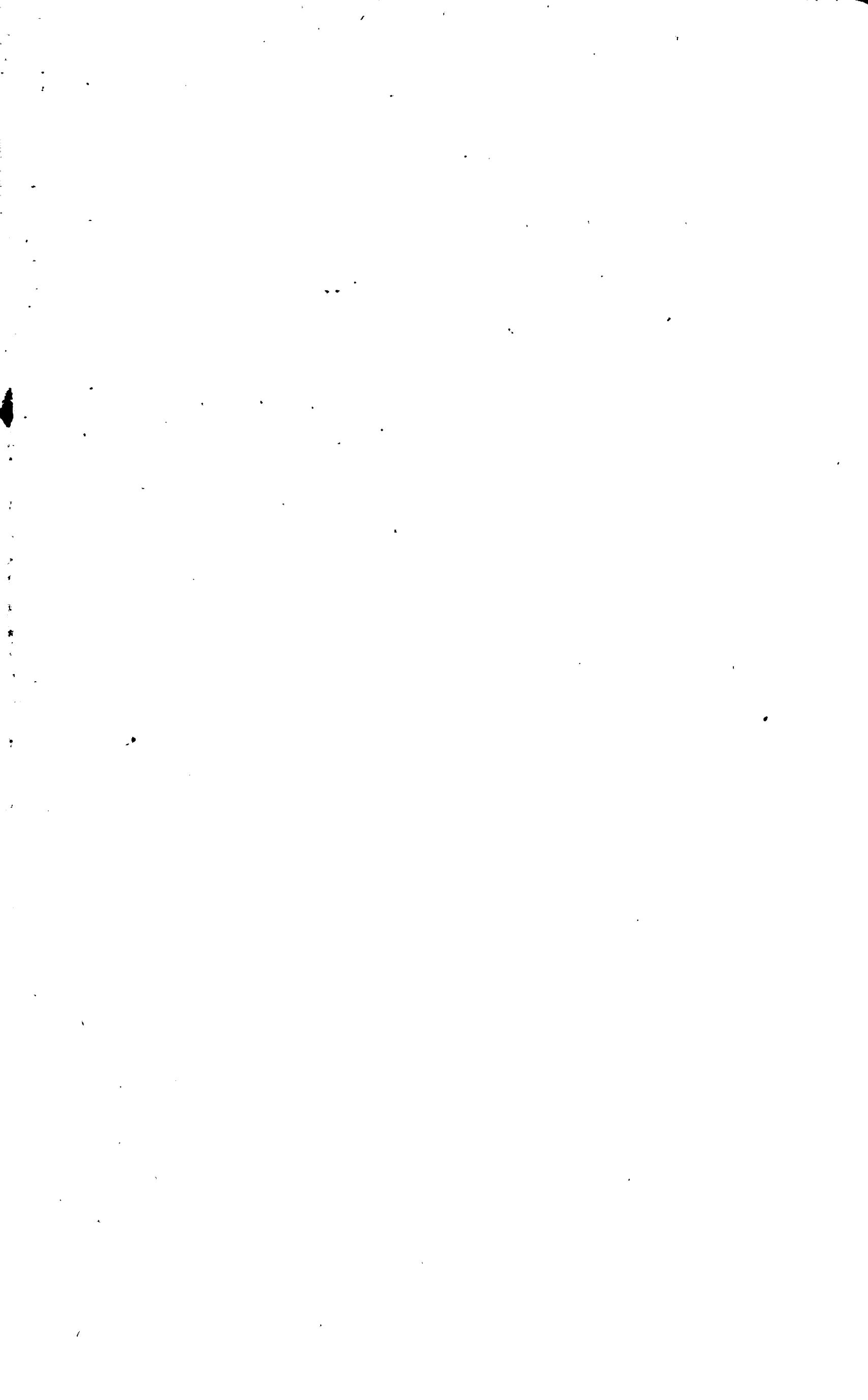
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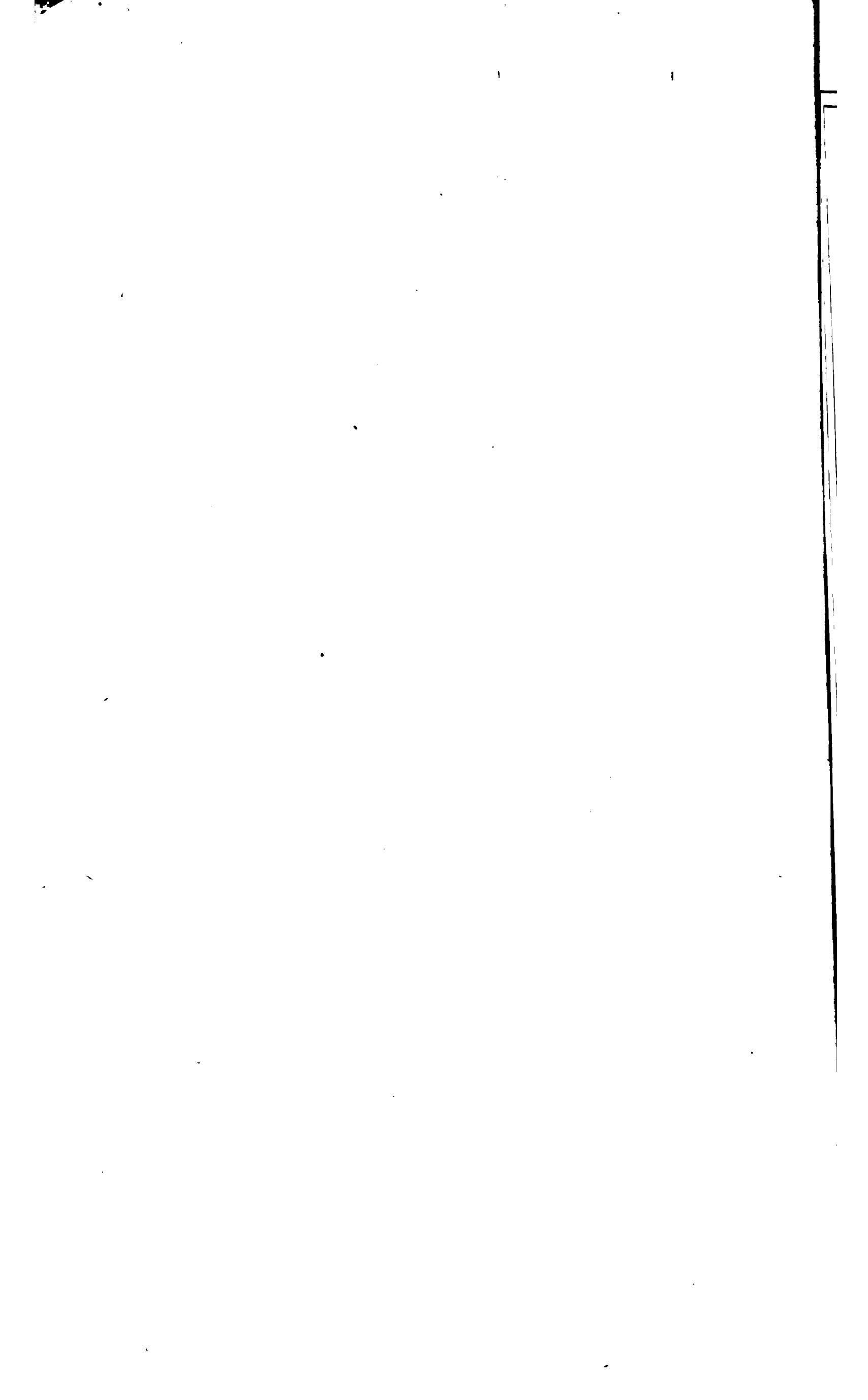
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# Squibb's Atlas

*of*

## The Official Drugs

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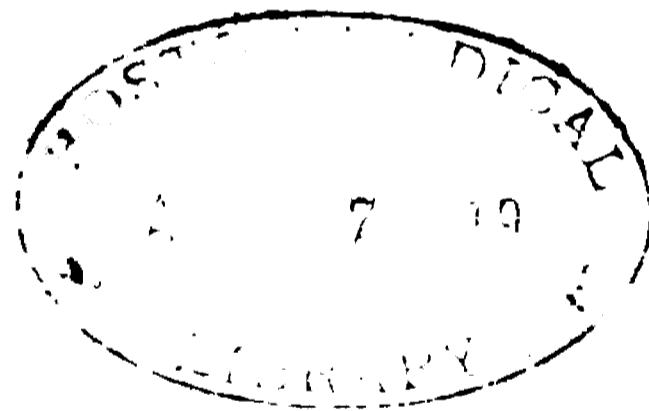
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etc.

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## PREFACE

**S**QUIBB'S ATLAS OF THE OFFICIAL DRUGS is a complete, up-to-date, trustworthy handbook on pharmacognosy.

Pharmacognosy in its broadest signification is a knowledge of drugs, whether healing or noxious. It has been made to include all remedies, not only those in a natural state but also those changed by art. This latter inclusive meaning is designated more correctly by pharmacology, and the best present-day usage limits pharmacognosy to one branch of pharmacology, namely, *a knowledge of crude drugs*.

The importance of a knowledge of crude drugs (pharmacognosy) to the physician, and especially to the pharmacist, cannot be overestimated. It is true that the day when the physician gathered or bought roots and leaves, and himself prepared his remedies from them, has gone. He now has at hand elegant preparations made in large laboratories. In this, however, may be a danger. Too often the pharmacist allows low price rather than quality to appeal to him, and too often the physician is content to use without question what is offered by the manufacturer. A knowledge of the nature and of the therapeutic value of the crude drugs used as the basis for the remedies in question would have dispelled an illusion financially detrimental and injurious to reputation. It has been urged, however, and with some degree of truth, that, without an unwarranted expenditure of time, a working knowledge of pharmacognosy cannot be had,

as it must be sought out from much which is of use to the specialist only.

To provide pharmacists and physicians and students of pharmacy and of medicine with a handbook on pharmacognosy, one which should be complete, yet at the same time clear, concise and with its matter in a form easy to get at and to use, has been our object in publishing this *Atlas*.

*Squibb's Atlas of The Official Drugs*, then, has the following characteristics:

1. It is complete but does not burden the user with matter of no interest to him. It confines itself to the living *materia medica*, to the standardized drugs of the United States Pharmacopœia and of the National Formulary; so all that is mentioned in Squibb's *Atlas* is of worth.

2. It classifies and groups the drugs so as to permit ready reference.

3. It systematizes all descriptions, so that the information contained therein is easily remembered.

4. It provides a working photograph of each drug, so that by the eye the description is made clearer and easily comprehended, while there is gained information which no verbal description could convey.

5. The introduction to each chapter contains an explanation of the terms used in describing each class of drugs.

6. A glossary of botanical terms is added, giving direct information to the student and affording the professional man an opportunity to refresh his memory.

The author is convinced by years of practical work and teaching that the most logical method of classifying drugs is by separating them into groups according to the part or parts used, i.e., roots, barks, etc. Such a classification enables the student and phar-

macist more easily to recognize and memorize the diagnostic characteristics of each drug.

Under each drug are given its title, abbreviation, English name, synonyms, botanical origin, part or parts used, permissible limits of impurities, assay, habitat, description (including odor and taste), and official preparations, if any.

The descriptions of the drugs of a group have been systematized so that they all begin and end in the same sequence. Each description is complete, yet free from unnecessary technical terms, and care has been taken to include such new facts as are indispensable to the selection of pure drugs.

All the photographs are made from original material selected and arranged by the author. In the case of starch, lycopodium, etc., the plates are made from drawings by the author. In preparing the plates care has been taken to have every part of the description illustrated, so that the reader has a pictorial as well as a written description of each official drug. In selecting and arranging the material preparatory to photographing, it frequently has been necessary to examine hundreds of samples and tons of drugs in order to make the photographs typical and at the same time to show the normal variation in form. In most cases separate photographs and descriptions are given of each drug, even though in some instances the United States Pharmacopœia and the National Formulary group these drugs under one title.

The introduction to each chapter sets forth the plan of study of each group and includes illustrations of the terms used in describing the individual drugs of that chapter.

In a work on pharmacognosy the use of technical terms is unavoidable, but the introductions to the

chapters will sufficiently explain their meaning and obviate any difficulties in this respect, while the glossary will give further help in understanding the terms used.

The author is indebted to Messrs. E. R. Squibb & Sons for their generosity in the matter of illustrations and general execution of the book, inasmuch as they have provided the very best products of the photographers' and engravers' arts.

It is hoped that Squibb's Atlas, for the preparation of which years of work have been required, will stimulate the interest of both pharmacists and physicians in the nature and genuineness of the drugs they use, and will awaken the members of each of these professions to the necessity for using only genuine drugs.

WILLIAM MANSFIELD

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## CHAPTER I

### ROOTS

**I**N the study of roots the following must be considered: Occurrence, size, type, nature, stem bases and scars, texture, color, surface, fracture, outline, cortex, cambium or endodermis, wood or central cylinder, pith, odor and taste.

**1. Occurrence.** This refers to the condition of the root, whether *entire*, as parsley; or *broken*, as belladonna; or *cut*. If cut, the sections may be *transverse*, as in bryony; or *oblique*, as in calumba; or *longitudinal*, as in spikenard.

**2. Size.** The length may vary from a few millimeters, as in the broken pieces of most roots, to a meter or more, as in Mexican sarsaparilla. The diameter may vary from 1 mm., as in Virginia snakeroot, to 9.7 cm., as in *phytolacca*.

**3. Type.** This refers to the position of the root, whether *vertical*, usual position, as in pyrethrum; or *oblique*, as in senega; or *horizontal*, as in senega. In most roots with numerous branches, both *horizontal* and *oblique* types occur.

**4. Nature.** This refers to the shape of the root, whether *simple*, as in pyrethrum; or branched, as in senega; or *straight*, as in stillingia; or *twisted*, as in American burdock; or *crooked*, as in Rio ipecac.

**5. Stem Bases and Scars.** This refers to the remains of stems, as in Peruvian krameria, and to scars, as in burdock. The stems may be *short*, as in scammony; or *long*, as in ipecac. The stem scars may be *small*, as in senega; or *large*, as in pyrethrum.

**6. Texture.** The texture may be *non-fibrous*, as in parsley; *starchy*, as in bryony; *resinous*, as in pyrethrum; *waxy*, as in the cut surface of pareira; *granu-*

*lar*, as in *asclepias*; *horny*, as in European burdock; *fibrous*, as in *phytolacca*; *waxy and fibrous*, as in ipecac; *starchy and fibrous*, as in *sarsaparilla*; *resinous and fibrous*, as in *baptisia*; *granular and fibrous*, as in *krameria*.

**7. Color.** The color refers to the outer surface of the drug. The most common shades are the grays, yellows, browns and reds. The color of the different drugs is given under the description, and the variation is fairly uniform. The color of drugs is important, because it is a criterion of quality. Off-color indicates improper collecting, drying, shipping or storing of drugs. Experience in handling drugs is necessary in order to acquire a knowledge of color values.

**8. Surface markings.** The surface is *furrowed* when it has sharply defined, parallel elevations and depressions, as in Mexican sarsaparilla. Furrows may form straight parallel lines, as in Mexican sarsaparilla, or they may be spirally arranged, as in scammony root. The surface is *wrinkled* when it is irregularly contracted into furrows, as in bryony and in pyrethrum. The surface is *fissured* when it has narrow openings caused by the separation of the tissues. The fissures may be shallow, as in *stillingia*, or deep, as in *Savanilla krameria* and in *Carthagena ipecac*. The surface is *sunken* when it is depressed because of the shrinking of the inner tissue, as in *jalap*; *cleft* when it has irregular openings caused by the separation of the tissues, as in Russian licorice; *split* when it has longitudinal breaks in the tissue caused by cutting it into pieces, as in *berberis* and in *gelsemium*; *keeled* when it has a longitudinal ridge or elevation of the cortex, beginning at the crown and extending toward the root, as in *senega*; *annulated* when it has transverse parallel elevations or outgrowths of tissue. It may be incompletely annulate, as in *phytolacca*; or completely annulate, as in parsley root. The surface is *nodulated* when it is extended as a rounded, knot-like mass of tissue, as in wild yam; *abraded* when the outer layers have been removed by the friction resulting from handling and transporting the drug, as in

belladonna root; *smooth* when it has no perceptible projections or depressions, as in cut sections of belladonna root.

9. **Fracture.** The term *fracture* refers to the manner in which a root breaks when it is subjected to sufficient pressure. In determining the fracture, place the drug between the thumbs and the two adjacent fingers. Press the thumbs outward until they come together. If the drug breaks clear across it has a *complete fracture*. Belladonna root, and most roots, in fact, have a complete fracture. If the drug breaks only part way, it has an *incomplete fracture*. All the sarsaparillas and spikenard have an incomplete fracture. When the root is too tenacious to be fractured, the *broken surface* is spoken of. Pareira is so tenacious that it requires a sharp blow of a hammer or a hatchet to break the surface. If the root bends instead of breaking when subjected to pressure, it has *no fracture* or is *fractureless*, as the roots of the convallaria, caulophyllum, aletris and helonias. Drugs with a complete fracture or an incomplete fracture or a broken surface are divided into seven groups: (1) Those having a *very weak, brittle fracture*, as the roots of American angelica, senega, spigelia and serpentaria; (2) those having a *weak, brittle fracture*, as parsley root; (3) those having a *brittle fracture*, as the roots of burdock, rumex and belladonna; (4) those having a *tough fracture*, as pyrethrum; (5) those having a *strong, tough fracture*, as licorice, stillingia and echinacea; (6) those having a *very strong, tough fracture*, as phytolacca; (7) those which are too tough to be fractured, but are breakable, as pareira, asclepias, hydrangea, krameria and scammony. In a few drugs the cortex is brittle and the wood is tough, as in Rio ipecac, Carthagenia ipecac, the kramerias and baptisia. When a fracture is made, the nature of the fractured surface should be observed. It is *concordal* if the surface is curved; *even*, if the surface is plain; *uneven*, if the surface is rough; and *hackly*, if the surface is sharp and jagged. These terms are combined with the classifications of brittle and tough fractures.

to denote fractures. *Calumba* has a *brittle, concordal fracture*; *senega* has a *very weak, brittle, even fracture*; *burdock* has a *brittle, uneven fracture*; *hydrangea* has a *very strong, tough, hockly fracture*. Fracture is an aid to the identification of drugs; therefore it should be kept in mind when drugs are selected. Many drugs when exposed to moisture will absorb water and become pliable. This is caused by the softening of the tissue by the absorbed water. Parsley root is an example of such a drug. When parsley root is pliable it contains an excess of moisture; it is, therefore, deficient in strength and is likely to become mouldy. Fracture, or lack of fracture, is in most cases a criterion of the quality of the drug.

**10. Outline.** The outline of roots refers to the form of the oblique, or longitudinal, or cross sections of the root. In most roots the outlines are,—cylindrical, as in *krameria*; in others it is nearly circular, as in *stillingia*; or oval, as in *calumba*; or rectangular, as in *phytolacca*; or irregular, as in *rumex*; or as in cross-sections of most cut roots, as in *belladonna* root. The outline may also be wavy, as in *scammony* root.

**11. Cortex.** The cortex includes everything outside the cambium or endodermis. When the cortex is studied, the diameter, the color, and the markings must be considered. The diameter varies from 1 mm., as in *senega*, to 6 mm., as in *calumba*. For every drug there is a fairly uniform maximum diameter—*i.e.*, the cortex of roots growing under normal conditions does not exceed a certain diameter. The ratio of the diameter of the cortex to that of the central cylinder should also be kept in mind. In the majority of roots the central cylinder or wood is thicker than the cortex. This point is well illustrated in *krameria* and in *Carthagenia ipecac*. In other roots, the cortex is thicker than the central cylinder. The color of the cortex, which is given under the description of each drug, varies in different roots. Frequently the cortex is of one color and the wood of another, as in *krameria*. The markings, or macroscopic structures, of the cortex must be kept in mind. The cortex of European angelica

has prominent round resin cavities with resin; parsley has less distinct resin cavities; the cortex of stillingia root also has small resin cells; the cortex of calumba is radiate; baptisia is less distinctly radiate; the cortex of althaea has concentric lines composed of mucilage cells. Many roots have no characteristic markings in the cortex.

12. **Cambium.** The cambium increases the growth (diameter) of the root by the addition of new cells to the wood and to the cortex. The cambium zone occurs between the cortex and the wood. It is usually very distinct, as in belladonna; or indistinct, as in baptisia. In the latter case the cortex appears to come directly in contact with the wood. It should be remembered, however, that a cambium zone is present even if not distinguishable.

13. **Endodermis.** Endodermis is a term applied to a layer of cells surrounding the central conducting strand (stele) of roots and rhizomes of plants having one seed leaf (monocotyledonous plants). Such an endodermis is faintly seen in the cross-section of Mexican sarsaparilla root.

14. **Wood.** The wood includes everything within the cambium zone, as in calumba. When the wood is studied, its diameter, its color, and its markings should be considered. The diameter varies from less than 2 mm., as in Rio ipecac, to 10.5 cm., as in the sections of a large bryony root. The color of the wood, which is given under the description, varies in different roots. An odd case of coloring occurs in krameria, the central portion of which is darker than the outer; and in pyrethrum, the radiate portion of which is yellow. It differs in many cases from the color of the cortex, as in calumba. The markings of the wood are frequently diagnostic. The wood of belladonna and rumex is finely radiate; pyrethrum is prominently radiate; calumba is interruptedly radiate. The wood of phytolacca is divided into concentric zones. The wood of senega has a V-shaped, undeveloped portion. The wood of scammony has a mottled surface caused by alternating masses of yellowish conducting tissue

and light-colored parenchymatic tissue. Longitudinal sections of the wood of phytolacca have parallel ridges. In krameria and other roots the wood has no characteristic markings. The *pith* may be of small diameter, as in pareira; or of large diameter, as in calumba. In European burdock it is hollow or cleft.

15. **Central Cylinder.** The central cylinder is everything within the endodermis. In the sarsaparillas it is porous.

16. **Odor.** In order to judge of the genuineness of many drugs a knowledge of odors is necessary. This knowledge is acquired only by considerable practice in smelling drugs. It is impossible to describe an odor so minutely that one unfamiliar with a drug can recognize it from a description of its odor, or to distinguish between two odorous drugs by the description alone. Most drugs with characteristic odors give off aromatic or volatile constituents. Drugs giving off such volatile constituents are called *aromatic drugs*. The odors of aromatic drugs differ in kind as well as in degree. When one has learned to associate a particular odor with a certain drug, odors become, as it were, diagnostic. Odors are qualified as faint or strong, pleasing or displeasing, and pungent. There are several roots with characteristic odors. These are parsley, inula, belladonna. There are many roots, such as belladonna, phytolacca, the sarsaparillas, the krameras, wild yam and pleurisy, which have no characteristic or pronounced odor. These are classed as *odorless roots*.

17. **Taste.** The taste of many drugs is characteristic; and since many drugs have similar tastes, it is possible to classify them according to taste. Taste may be simple—*i.e.*, one taste only; or complex—*i.e.*, two or more tastes. (a) *Simple Tastes.* The important simple tastes are mucilaginous, starchy, sweet, bitter, astringent, pungent, acrid, tingling and aromatic. Of the official roots, lappa has a mucilaginous taste; stillingia, a starchy taste; licorice, a sweet taste; calumba, a bitter taste; krameria, an astringent taste; wild indigo, a pungent taste; pyrethrum, senega, and stil-

lingia, acrid tastes; echinacea, a tingling taste; inula, an aromatic taste. (b) *Complex Tastes.* Several roots have complex tastes. In each case the first taste experienced is placed first, the second taste placed second, etc. Parsley has a sweet, pleasingly aromatic taste; althæa, a starchy, sweet, mucilaginous taste; sarsaparilla, a starchy, mucilaginous, sweet and acrid taste. Both the simple and complex tastes may be qualified—*i.e.*, weakly or strongly acrid, etc.; and the aromatic taste may be classed as pleasingly or disagreeably aromatic, as well as weakly and strongly aromatic.

It should be remembered, however, that taste is an aid to, and not a positive means of, identifying the average drug.

## **SARSAPARILLA—MEXICAN**

1, A typical curved and twisted root. 2, A cut root showing the woody central cylinder. 3, Furrowed surface of the root. 4, Cross-section of the root showing the endodermis.

## **SARSAPARILLA (Sarsap.) U. S. P.**

### **(1) Mexican Sarsaparilla**

**English name:** Sarsaparilla.

**Synonyms:** Mexican Sarsaparilla, Gray Sarsaparilla.

**Botanical origin:** *Smilax medica* Chamisso and Schlechtendal. (Fam. *Liliaceæ*.)

**Part used:** Root.

**Impurities:** None given in the Pharmacopœia.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Tropical America, Mexico and Vera Cruz.

#### **Description:**

Mexican sarsaparilla comes to market in the form of bales wound with three or four wire bands. The bales are composed of a great number of separate clusters of roots attached to a crown which bears several stem bases. The crown frequently has 150 roots attached to it. The stems are angled and thorny, and the surface is smooth and yellowish white. The crown is gnarled, hard, and woody. The stem and crown must not be used. The dirt stems and crowns make up about 25 per cent. of the drug. The roots are tortuous and variable in diameter; the larger roots have a maximum diameter of 6 mm. A few of the roots have rootlets. The texture is very slightly starchy and fibrous. The color varies from light brownish gray to nearly black. The blackness is caused by adhering particles of soil. The surface is deeply furrowed longitudinally. The fracture of the cortex is brittle, even, and complete; of the central cylinder, tough and half-complete. The outline is irregular and wavy. The cortex is less starchy than the other sarsaparillas, and it frequently has cavities near the central cylinder, from which it separates in drying. The central cylinder is brownish yellow and porous. The pith is grayish white and starchy. The odor is not characteristic. The taste is slightly starchy, mucilaginous, sweet and acrid.

**Constituents:** Smilacin, saponin, starch, resin, volatile oil, pectin, etc.

#### **Preparations:**

Decoctum Sarsaparillæ Compositum N. F.; Dose, 120 mils (4 fl. ozs.).

Fluidextractum Sarsaparillæ; Dose, 2 mils (30 min.).

Fluidextractum Sarsaparillæ Compositum; Dose, 2 mils (30 min.).

Syrupus Sarsaparillæ Compositus (from Fluidextract); Dose, 15 mils (4 fl. drs.).

## **SARSAPARILLA—HONDURAS**

**1. A large branch. 2. A small rootlet. 3. Shallow furrows.**

## **SARSAPARILLA (Sarsap.) U. S. P.**

### **(2) Honduras Sarsaparilla**

**English name:** Sarsaparilla.

**Synonyms:** Honduras Sarsaparilla, Brown Sarsaparilla.

**Botanical origin:** *Smilax officinalis* Kunth, or an undetermined species of smilax. (Fam. *Liliaceæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Tropical America, Honduras and adjacent territory.

#### **Description:**

Honduras sarsaparilla comes to market in the form of bales, partially covered by two pieces of hide laced together with thongs of hide. These bales contain about 50 rolls. The individual rolls measure up to 75 cm. in length and up to 10 cm. in diameter. They are composed of roots folded lengthwise and wound tightly with long roots externally to within a few centimeters of the ends of the roll. The roots are tortuous and vary in diameter, the maximum diameter being 5 mm. The individual roots are nearly uniform. A few of the roots have rootlets. The texture is partly starchy and partly woody. The color is dark reddish brown. The surface is longitudinally furrowed. The fracture of the bark is brittle, even and complete; of the wood, tough and half-complete. The outline is wavy. The cortex is starchy and thinner than the central cylinder. The color varies from gray to nearly white. The central cylinder is woody, porous, and yellowish brown. The pith forms the greater part of the central cylinder and is grayish white and starchy. The odor is not characteristic. The taste is starchy, mucilaginous, slightly sweet and acrid.

**Constituents:** Smilacin, saponin, starch, resin, volatile oil, pectin, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Decoctum Sarsaparillæ Compositum N. F.; Dose, 120 mils (4 fl. ozs.).

Fluidextractum Sarsaparillæ; Dose, 2 mils (30 min.).

Fluidextractum Sarsaparillæ Compositum; Dose, 2 mils (30 min.).

Syrupus Sarsaparillæ Compositus (from Fluidextract); Dose, 15 mils (4 fl. drs.).

## **SARSAPARILLA—JAMAICA**

1, A typical root with numerous rootlets 2, A very small rootlet. 3, A cut root, showing the woody central cylinder. 4, Typical furrow.

## **SARSAPARILLA (Sarsap.) U. S. P.**

### **(3) Jamaica Sarsaparilla**

**English name:** Sarsaparilla.

**Synonyms:** Jamaica Sarsaparilla, Red Sarsaparilla.

**Botanical origin:** *Smilax ornata* Hooker filius. (Fam. *Liliaceæ*.)

**Part used:** Root.

**Impurities:** None given.

**Assay:** None given.

**Ash:** 10 per cent. or less.

**Habitat:** Tropical America, Jamaica, Costa Rica.

#### **Description:**

Jamaica sarsaparilla comes to market in burlap bales. The bales are composed of bundles of roots freed from the crown, folded lengthwise, and wound loosely with a long root. The roots are tortuous and have numerous branches with rootlets. Their maximum diameter is 5 mm. The texture is non-starchy or slightly starchy and woody. The color is yellowish or reddish brown. The surface is longitudinally furrowed, the furrows being shallow and numerous. The fracture of the cortex is brittle, even and complete; of the central cylinder, tough and half-complete. The outline is very irregular and wavy. The cortex is thin and mostly non-starchy. The central cylinder is brownish yellow and porous. The pith is grayish white and starchy. The odor is not characteristic. The taste is sweet, slightly mucilaginous and acrid.

**Constituents:** Smilacin, saponin, starch, resin, volatile oil, pectin, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Decoctum Sarsaparillæ Compositum N. F.; Dose, 120 mils (4 fl. ozs.).

Fluidextractum Sarsaparillæ; Dose, 2 mils (30 min.).

Fluidextractum Sarsaparillæ Compositum; Dose, 2 mils. (30 min.).

Syrupus Sarsaparillæ Compositus (from Fluidextract); Dose, 2 mils (30 min.).

## **BAPTISIA**

1. A typical root with numerous branches. 2. Elevated  
Root scar. 3. Cross-section showing the thick cortex. 4.  
Longitudinal section.

## **BAPTISIA (Baptis.) N. F.**

**English name:** Baptisia.

**Synonyms:** Wild Indigo.

**Botanical origin:** *Baptisia tinctoria* (Linné) R. Brown.  
(Fam. *Leguminosæ*.)

**Part used:** Root.

**Impurities:** Not more than 10 per cent. of the crown  
and stem or other matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Eastern United States.

### **Description:**

*Baptisia* occurs as cut and broken fragments, varying in length and diameter. The individual roots are simple or branched, and are frequently attached to a woody crown bearing one or more stem bases. The *texture* is resinous and woody. The largest roots have a maximum diameter of 15 mm. The *color* is light brownish yellow. The *surface* is finely wrinkled longitudinally and has many elevated root scars. The *fracture* is tough, strong, uneven and incomplete. The *outline* is nearly cylindrical. The *cortex* is about one-half as thick as the wood, dark brown, with numerous black resinous cavities, and radiate. The *wood* is yellowish, fibrous, slightly porous and finely radiate. The *odor* is slightly aromatic. The *taste* is strongly bitter, acrid and tingling.

**Constituents:** Glucosides (baptisin, baptin), resin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Baptisæ; Dose, 1 mil (15 min.).

## **KRAMERIA--PERUVIAN**

1, Large crown. 2, Clusters of small roots. 3, Older root with rough, scaly surface. 4, Younger root with smooth surface. 5, Light outer zone of wood. 6, Dark central zone of wood.

## **KRAMERIA (Kramer.) N. F.**

### **(1) Peruvian Krameria**

**English name:** Krameria.

**Synonyms:** Peruvian Rhatany.

**Botanical origin:** *Krameria triandra* Ruiz et Pavon.  
(Fam. *Leguminosæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Not less than 9 per cent. of aqueous extractive.

**Ash:** Not more than 5 per cent.

**Habitat:** Peru and Bolivia.

#### **Description:**

Peruvian krameria occurs as whole and broken roots mixed. These are branched and measure up to 30 cm. in length and up to 9.5 cm. in diameter at the crown. The crown bears numerous short stem bases, and it tapers into the main root, which has numerous branches. The texture of the cortex is granular; of the wood, fibrous. The color of the smaller roots is light reddish brown; of the larger roots, dark reddish brown. The surface of the smaller roots is nearly smooth; of the larger roots, rough and scaly. The fracture of the cortex is very brittle and hackly; that of the wood, very tough and hackly. The outline of sections of small roots is cylindrical. The cortex is not so thick as that of the Savanilla Krameria. The color is dull reddish brown. The wood has a yellowish brown outer zone and a nearly black central zone. The entire surface may be of a uniform brown color. The odor is not characteristic. The taste is astringent.

**Constituents:** Tannin, starch, gum, wax, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

Extractum Krameriae; Dose, 0.5 Gm. (8 grains).

Fluidextractum Krameriae; Dose, 1 mil (15 min.).

Fluidglyceratum Krameriae; Dose, 1 mil (15 min.).

Syrupus Krameriae; Dose, 4 mils (1 fl. dr.).

Tinctura Krameriae; Dose, 4 mils (1 fl. dr.).

## **KRAMERIA—SAVANILLA**

**1.** Typical branched root. **2.** Large transverse fissure. **3.**  
Root with numerous fissures. **4.** Cross-section of root.

## **KRAMERIA (Kramer.) N. F.**

### **(2) Savanilla Krameria**

**English name:** Krameria.

**Synonyms:** Savanilla Rhätany.

**Botanical origin:** *Krameria Ixina* Linné. (Fam. *Leguminosæ*.)

**Part used:** Dried root.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Not less than 9 per cent. of aqueous extractive.

**Ash:** Not more than 5 per cent.

**Habitat:** Mexico and Northern South America.

#### **Description:**

Savanilla krameria occurs as broken pieces of the roots. The roots are simple, rarely branched. They measure up to 13 mm. in diameter. Crowns and stem bases have never been observed. The texture of the bark is granular; of the wood, fibrous. The color varies from a deep reddish to chocolate brown. The surface has numerous slight longitudinal ridges and transverse fissures, which frequently extend to the wood. The fracture of the cortex is very brittle and even; that of the wood, very tough and hackly. The outline of sections is cylindrical. The cortex is thick, dark chocolate brown, and has no distinctive structure. The wood is yellowish brown and finely fibrous. The odor is not distinct. The taste is strongly astringent.

**Constituents:** Tannin, starch, gum, wax, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

Extractum Krameriae; Dose, 0.5 Gm. (8 grains).

Fluidextractum Krameriae; Dose, 1 mil (15 min.).

Fluidglyceratum Krameriae; Dose, 1 mil (15 min.).

Syrupus Krameriae; Dose, 4 mils (1 fl. dr.).

Tinctura Krameriae; Dose, 4 mils (1 fl. dr.).

## **PAREIRA**

1. A large root with small rootlets. 2. Branched root. 3. Cross-section showing eccentric zones of tissue. 4. Cross-section showing concentric zones of tissue. 5. Cross-section of small root.

## PAREIRA (Pareira) N. F.

**English name:** Pareira.

**Synonyms:** Pareira Brava.

**Botanical origin:** *Chondodendron tomentosum* Ruiz et Pavon. (Fam. *Menispermaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Peru, Brazil.

### Description:

Pareira occurs as long transverse pieces. The roots are simple or branched, with few small rootlets. They measure up to 6.5 cm. in diameter. The stems, which may be present, are cut in long, transverse pieces. They are greenish gray with scattered patches of lichens and with black apothecia (fruiting bodies). The cross-sections show concentric layers of radiating conducting tissue separated by narrow medullary rays. The surface is a dull gray. The texture of the roots is fibrous. The color is a dull brownish black. The surface is rough, with numerous incomplete transverse ridges, or it is nodulated, with irregular depressions. The fracture is very strong, tough and hackly. The outline is cylindrical and irregular. The cortex, which is light brown, is very thin and undulate. The wood shows several concentric or eccentric zones of conducting tissue separated by concentric zones of parenchymatic tissue. The concentric and eccentric zones of conducting tissue are composed of wedge-shaped masses with large pores (vessels), separated by broad medullary rays filled with starch. The odor is not distinct. The taste is strongly bitter.

**Constituents:** Alkaloid (buxine), fat, starch, gum, tannin, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Fluidextractum Pareiræ; Dose, 2 mils (30 min.).

## **SCAMMONIÆ RADIX**

**1.** Crown with stem scars and bases    **2.** Twisted root with deep furrows.    **3.** Cross-section showing mottled surface.  
**4.** Fractured surface.

# **SCAMMONIÆ RADIX (Scam. Rad.) U. S. P.**

**English name:** Scammony Root.

**Synonyms:** None commonly known.

**Botanical origin:** *Convolvulus Scammonia* Linné.  
(Fam. *Convolvulaceæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** Not less than 8 per cent. of the total resins of  
Scammony Root.

**Ash:** None given.

**Habitat:** Western Asia.

## **Description:**

Scammony root occurs as a mixture of entire and broken pieces. The roots are mostly simple and twisted, with few rootlets. They measure up to 43 cm. in length, and up to 4.8 cm. in diameter. The crown is enlarged, and in the older roots it often has twenty-five stem bases or scars. The texture is resinous and fibrous. The color varies from gray to yellow or reddish brown. The surface has longitudinal furrows, which are spiral in the twisted portion of the root. If old, the root scars are slight depressions; if recent, elevations. The fracture is very strong, tough, and uneven. The outline is cylindrical and irregular. The cortex is of unequal thickness, slightly radiate and dark in the region of the cambium. The wood is strongly porous and radiate near the cambium. It has scattered yellowish wood bundles separated by white or yellowish white parenchyma. This gives the wood a mottled appearance. The odor is slightly aromatic. The taste is slightly sweet and strongly acrid.

**Constituents:** Resin (scammonin), etc.

**Dose:** 0.25 Gm. (4 grains).

## **Preparations:**

Enters into Extractum Colocynthidis Compositum (from resin);  
Dose, 0.25 Gm. (4 grains).

Resina Scammoniæ; Dose, 0.2 Gm. (3 grains).



# **PHYTOLACCA (Phytolac.) N. F.**

Root.

*Idra* Linné. (Fam.

d Southern United

stire, broken, transverse,  
the roots vary in length  
mm. The uncut roots are  
arsely fibrous. The color  
brown. The surface is  
in incompletely annulate;  
fracture is very strong,  
lar or oval and irregular.  
rod in transverse sections  
ous tissue, between which  
sue; longitudinal sections  
The color varies from  
not characteristic. The  
1.

glaccin, asparagin,

Alterative, 0.1 Gm.

istic, 1 ml (15 min.);

## **PHYTOLACCA**

1, Longitudinal section. 2, A typical cross-section. 3, Concentric woody or fibrous tissue. 4, Incompletely annulate surface. 5, Cross-section of small root.

## **PHYTOLACCA (Phytolac.) N. F.**

**English name:** Phytolacca.

**Synonyms:** Poke Root, Ink-berry Root.

**Botanical origin:** *Phytolacca decandra* Linné. (Fam. *Phytolaccaceæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 14 per cent.

**Habitat:** Northeastern, Central and Southern United States.

### **Description:**

*Phytolacca* occurs as a mixture of entire, broken, transverse, longitudinal, and oblique sections. The roots vary in length up to 5 dm. and in width up to 9.7 cm. The uncut roots are simple or branched. The texture is coarsely fibrous. The color varies from light yellowish to grayish brown. The surface is irregularly wrinkled longitudinally and incompletely annulate; the ridges are very light yellow. The fracture is very strong, tough and hackly. The outline is circular or oval and irregular. The cortex is thin and brown. The wood in transverse sections shows concentric ridges of elevated fibrous tissue, between which are sunken masses of parenchymatic tissue; longitudinal sections show parallel ridges of fibrous tissue. The color varies from whitish brown to gray. The odor is not characteristic. The taste is slightly sweet and strongly acrid.

**Constituents:** Resin, tannin, phytolaccin, asparagin, sugar, starch, etc.

**Dose:** Emetic, 1 Gm. (15 grains); Alterative, 0.1 Gm. (1½ grains).

### **Preparations:**

Fluidextractum Phytolaccæ; Dose, Emetic, 1 mil (15 min.); Alterative, 0.1 mil (1½ min.).

## **STILLINGIA**

1, Typical root tapering toward the ends. 2, Stems, which are usually present in the drug. 3, Partially cut root, showing fibrous nature of the cortex. 4, Cross-section showing cortex separated from the wood. 5, Longitudinal section. 6, Cross-section showing concentric and radiate structure.

## **STILLINGIA (Stilling.) U. S. P.**

**English name:** Stillingia.

**Synonyms:** Queen's Root, Queen's Delight.

**Botanical origin:** *Stillingia sylvatica* Linné. (Fam. *Euphorbiaceæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Southern United States, from Virginia to Texas.

### **Description:**

Stillingia root occurs as a mixture of entire, cut, and as partially cut pieces. The roots are entire or branched. The branches curve upward when dry. The typical root has a smaller diameter at the ends than in the center. It measures up to 45 cm. in length, and up to 3.5 cm. in diameter. The crown frequently bears one or more hard, woody, purplish brown stems. The texture is soft fibrous. The color is dark reddish or chocolate brown. The surface is longitudinally striated and has many shallow transverse fissures. The fracture is strong, tough and uneven. The outline is nearly cylindrical and slightly wavy. The cortex is thick, soft fibrous, and frequently slightly separated from the wood. It is pinkish brown and has numerous dark resin cavities. The wood has a concentric and radiate structure and is pinkish white. The odor is not characteristic. The taste is slightly sweet, acrid and bitter.

**Constituents:** Tannin, volatile oil, fixed oil, starch, gum, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Stillingiae; Dose, 2 mils (30 min.).

Fluidextractum Stillingiae Compositum N. F.; Dose, 2 mils (30 min.).

Syrupus Stillingiae Compositus N. F.; Dose, 4 mils (1 fl. dr.).

## **RUMEX—CURLED**

1. Twisted root. 2. Transverse and longitudinal sections.  
3. Stem of the plant. 4. The thick cortex. 5. Radiate  
wood.

## RUMEX N. F.

### (1) Curled Rumex

**English name:** Rumex.

**Synonyms:** Curled Dock.

**Botanical origin:** *Rumex crispus* Linné. (Fam. *Polygonaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stem bases.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe and Asia; naturalized in United States and Canada.

#### Description:

Curled rumex occurs as entire roots, as transverse, and as longitudinal slices. The entire roots are simple or branched and twisted. They measure up to 30 cm. in length and up to 25 mm. in diameter. The crown frequently bears a portion of the stem, which is purplish brown, longitudinally striated, and has a large purple pith. The texture of the root is partially fibrous. The color is dark reddish brown. The surface has numerous slightly elevated transverse ridges, longitudinal furrows, and few fine rootlets. The fracture is brittle when the root is dry, but pliable when it is moist. The outline of the cross-sections is very irregular and wavy. The cortex is yellowish brown and finely radiate. The cambium zone is dark brown. The wood has a distinct radial structure composed of numerous yellowish masses of conducting tissues. The pith is light yellow and has numerous scattered isolated strands of conducting tissue. The odor is not characteristic. The taste is slightly sweet, astringent and bitter.

**Constituents:** Chrysophanic acid, emodin, tannin, ruminicin, etc.

**Dose:** 4 Gm. (1 drachm).

#### Preparations:

Fluidextractum Rumaticis; Dose, 4 mils (1 fl. dr.).

## **RUMEX—BROAD-LEAVED**

1, A twisted, furrowed root, annulate at the crown. 2, Numerous transverse and longitudinal sections. 3, Stems of the plant. 4, Wavy cortex. 5, Wood of irregular diameter.

## RUMEX N. F.

### (2) Broad-leaved Rumex

**English name:** Rumex.

**Synonyms:** Yellow Dock Root, Broad-leaved Rumex,  
Broad-leaved Dock Root.

**Botanical origin:** *Rumex obtusifolius* Linné. (Fam.  
*Polygonaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stem bases.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe, Asia; naturalized in United States  
and Canada.

#### Description:

Broad-leaved rumex occurs as a mixture of entire roots and as transverse or longitudinal sections of roots. The entire roots are simple or branched and twisted, and they measure up to 35 cm. in length and up to 30 mm. in diameter. The stem is striated and purple with fragments of leaf scales; the center is usually hollow. The texture is slightly fibrous. The color is pale yellowish brown. The surface of the roots is mostly free of annulate portions. They are finely furrowed longitudinally and have few fine rootlets or root scars. The fracture is brittle when the root is dry, but pliable when it is moist. The outline of the cross-sections is cylindrical or irregular. The cortex is dark greenish yellow, thick and finely radiate. The cambium zone is nearly black. The wood frequently separates from the cambium upon drying. The outer part is very fibrous and grayish white; the central part is yellow or brown. The odor is not characteristic. The taste is slightly sweet and astringent.

**Constituents:** Chrysophanic acid, emodin, tannin, ruminicin, etc.

**Dose:** 4 Gm. (1 drachm).

#### Preparations:

Fluidextractum Rumaticis; Dose, 4 mils (1 fl. dr.).

## **ALTHAEA**

1, Longitudinal section showing dark cambium zone. 2, Longitudinal furrow. 3, Irregular cut pieces. 4, Cross-section showing wavy cortex, dark cambium zone and wood.

## ALTHÆA U. S. P.

**English name:** Althæa.

**Synonyms:** Marsh Mallow Root, White Mallow Root.

**Botanical origin:** *Althæa officinalis* Linné (Fam. *Malvaceæ*) deprived of the brown, corky layer and small roots.

**Part used:** Root.

**Impurities:** None given in Pharmacopœia.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Europe, Asia; cultivated.

### Description:

*Althæa* occurs as peeled, entire, or as small cut pieces of the peeled root. The roots are simple or branched and straight or twisted. The branches are usually separated when the root is peeled. Entire roots measure up to 35 cm. in length and up to 22 mm. in diameter. Stems have never been observed. The texture is fibrous and starchy. The color varies from gray to yellowish white. The surface has numerous long, projecting bast fibers, deep, longitudinal furrows, and many slightly elevated dark brown root scars. The fracture is very tough and uneven. The outline of sections of entire roots is irregular and wavy. The cortex is thick, and when magnified shows fine concentric dark-colored zones of sieve and mucilage tissue. The cambium zone is dark-colored. The wood is indistinctly radiate near the cambium. The central portion appears structureless and starchy. The odor is very slight. The taste is starchy, mucilaginous and sweet.

**Constituents:** Starch, mucilage, pectin, sugar, fat, asparagin (althein), betaine, etc.

### Preparations:

Species Pectoralis N. F.; Dose, 4 Gm. (1 drachm).  
Syrupus Althææ N. F.; Dose, 4 mils (1 fl. dr.).

## **ASCLEPIAS**

- 1, Large root with a rough surface and transverse depressions.
- 2, Irregular piece of root with sunken surface.
- 3, 4, Peeled root showing wavy lines of conducting tissue.
- 5, Transverse section with concentric and slightly radiate lines.

## **ASCLEPIAS (Asclep.) N. F.**

**English name:** Asclepias.

**Synonyms:** Pleurisy Root, Butterfly Weed Root.

**Botanical origin:** *Asclepias tuberosa* Linné. (Fam. *Asclepiadaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Northern, Southern, Middle, and Middle Western United States.

### **Description:**

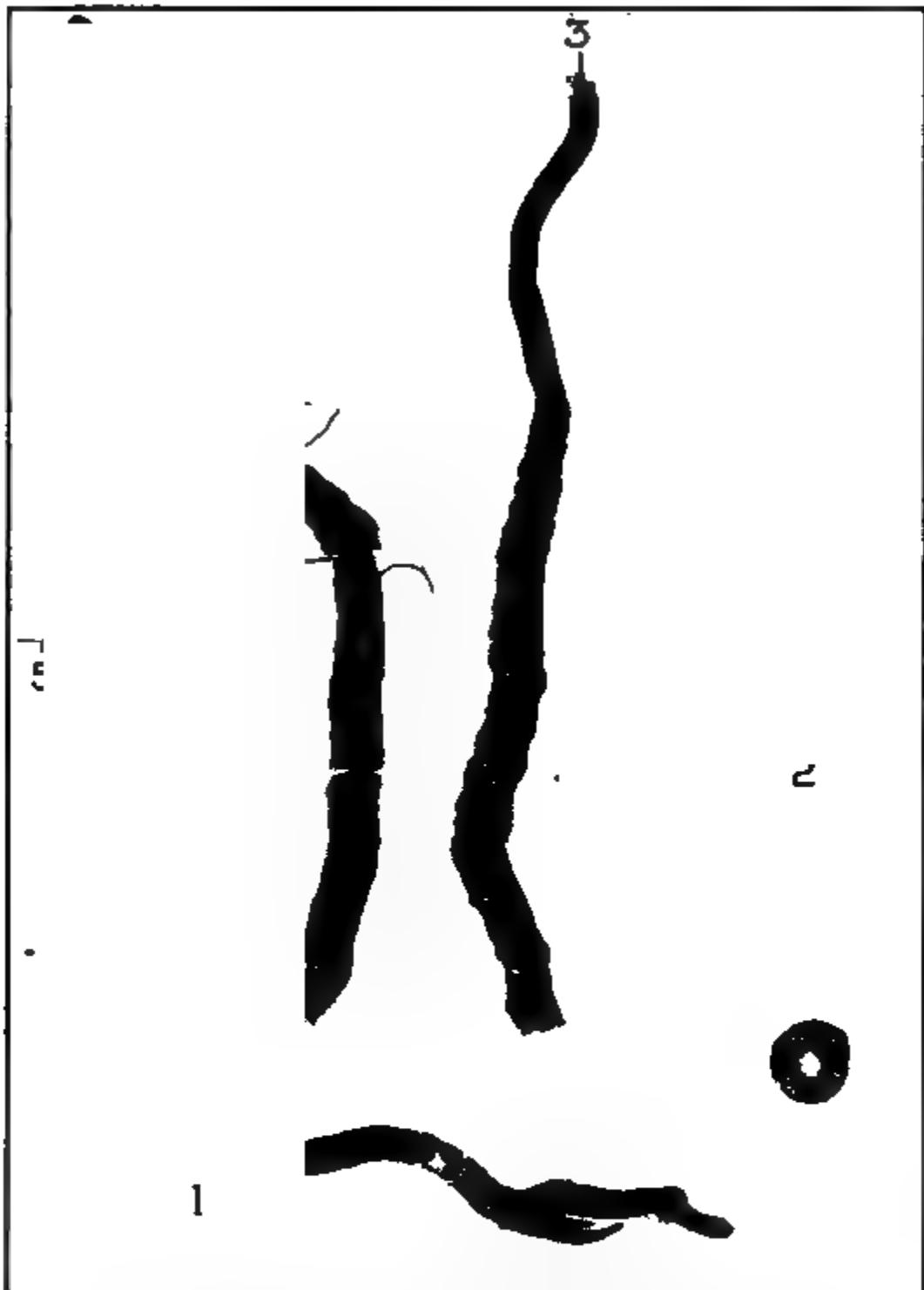
*Asclepias* occurs as entire roots, as transverse and oblique slices, or as broken fragments. The roots are simple or rarely branched and have a few small rootlets free of cortex. Entire roots measure up to 26 cm. in length and up to 6 cm. in diameter. Stems are rarely present. They are circular, smooth, and hollow, and have an easily removed cortex. The texture is fibrous and starchy. The color is orange when recently gathered, but in time changes to light orange, and finally gray. The surface of the younger roots is nearly smooth, while that of the older roots is rough. This roughness is caused by the separation of the periderm and by numerous incomplete transverse depressions, caused by the shortening of the length of the root during drying. When the periderm is removed the surface is nearly white with darker-colored wavy lines of conducting tissue. Transverse sections show fine concentric and coarser radiating ridges. The fracture is very tough and uneven. The outline is irregularly rounded. The cortex is thin, hard and brittle. The wood has fine concentric and coarser radiating ridges. The color varies from nearly white with yellow conducting tissue to dull gray. The odor is not characteristic. The taste is bitter and acrid.

**Constituents:** Starch, tannin, albumin, pectin, gum, fat, volatile oil, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Asclepiadis; Dose, 2 mils (30 min.).



### IPECACUANHA—CARTAGENA

1, A branched root. 2, A large root with numerous ridges and shallow fissures. 3, Stem portion of the plant above and root below. 4, A large fissure. 5, A small rootlet. The cross-section showing the cortex thicker than the wood is unnumbered.

# IPECACUANHA (Ipecac.) U. S. P.

## (1) Cartagena Ipecac

**English name:** Ipecac.

**Synonyms:** Cartagena Ipecac, Colombia Ipecac.

**Botanical origin:** *Cephaëlis acuminata* Karsten.  
(Fam. *Rubiaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Not less than 1.75 per cent. of ether-soluble alkaloids.

**Ash:** Not less than 1.8 per cent. nor more than 4.5 per cent.

**Habitat:** Colombia.

### Description:

Cartagena ipecac occurs as a mixture of entire, and as broken pieces of, roots. These roots are simple and branched and have many fine rootlets. They measure up to 15 cm. in length and up to 8 mm. in diameter. The stems are frequently as large as the roots, and they are very tough and woody. The texture of the cortex of the roots is horny; of the wood, fibrous. The color is grayish brown. The surface has a few low, incomplete transverse ridges, and a few narrow fissures. The fracture of the cortex is weak, brittle and even; that of the wood, strong, tough and even. The outline of cross-sections is nearly cylindrical. The cortex is grayish brown, horny, and slightly radiate when magnified, and it is thicker than the wood. The wood is yellowish white and finely fibrous. The odor is indistinct. The taste is bitter, nauseous and acrid.

**Constituents:** Alkaloids (emetine, cephæline, etc.), starch, sugar, resin, choline, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Fluidextractum Ipecacuanhæ; Dose, 0.05 mil (1 min.).

Pulvis Ipecacuanhæ et Opii; Dose, 0.5 Gm. (8 grains).

Syrpus Ipecacuanhæ (from fluidextract); Dose, Expectorant, 1 mil (15 min.); Emetic, 15 mils (4 fl. drs.).

Syrpus Ipecacuanhæ et Opii N. F.; Dose, 4 mils (1 fl. dr.).

Tinctura Ipecacuanhæ et Opii N. F.; Dose, 0.5 mil (8 min.).

Vinum Ipecacuanhæ N. F.; Dose, 1 mil (15 min.).

## IPECACUANHA--RIO

1, Stem above and root below. 2, Irregular transverse ridge 3, A broad fissure. 4, Transverse section of the root.

## IPECACUANHA (Ipecac.) U. S. P.

### (2) Rio Ipecac

**English name:** Ipecac.

**Synonyms:** Rio Ipecac, Brazilian Ipecac.

**Botanical origin:** *Cephaëlis Ipecacuanha* (Brotero)  
A. Richard. (Fam. Rubiaceæ.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Not less than 1.75 per cent. of ether-soluble alkaloids.

**Ash:** Not less than 1.8 per cent. nor more than 4.5 per cent.

**Habitat:** Brazil, Bolivia; cultivated.

#### Description:

Rio ipecac occurs as entire or as broken pieces of roots. The roots are simple or branched and much twisted and crooked. They measure up to 18 cm. in length and up to 6 mm. in diameter. The stems have a smaller diameter than the roots, and they are very fibrous. The texture of the cortex of the root is waxy; of the wood, fibrous. The color varies from dark brown to nearly black. The surface has numerous incomplete transverse ridges and shallow or broad fissures, which extend to the wood. The outline of cross-sections is irregularly cylindrical. The fracture of the cortex is weak, brittle and even; that of the wood, strong, tough and even. The cortex is as thick as the wood and yellowish white. The cambium zone is dark brown. The wood is yellowish white and finely fibrous. The odor is not distinct. The taste is bitter, nauseous and acrid.

**Constituents:** Alkaloids (emetine, cephaëline, etc.), starch, sugar, resin, choline, etc.

**Dose:** (Emetic) 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Ipecacuanhæ; Dose, 0.05 mil (1 min.).

Pulvis Ipecacuanhæ et Opii; Dose, 0.5 Gm. (8 grains).

Syrpus Ipecacuanhæ (from fluidextract); Dose, Expectorant, 1 mil (15 min.); Emetic, 15 mils (4 fl. drs.).

Syrpus Ipecacuanhæ et Opii N. F.; Dose, 4 mils (1 fl. dr.).

Tinctura Ipecacuanhæ et Opii N. F.; Dose, 0.5 mil (8 min.).

Vinum Ipecacuanhæ N. F.; Dose, 1 mil (15 min.).

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## PYRETHRUM

1. Broken surface showing radiate ridges.
2. Tuft of white fibers in center of the crown.
3. Crown showing concentric lines.
4. Cut longitudinal surface showing wavy line.
5. Root with a large crown.
6. A slightly twisted spindle-shaped root.

## PYRETHRUM (Pyreth.) U. S. P.

**English name:** Pyrethrum.

**Synonyms:** Pellitory Root, Roman Pyrethrum.

**Botanical origin:** *Anacyclus Pyrethrum* (Linné) DC  
Candolle. (Fam. Compositæ.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Northern Africa, Algeria almost wholly.

### Description:

Pyrethrum occurs as whole and broken pieces, varying in length up to 14 cm. and in width up to 15 mm. The roots are mostly simple, slightly twisted, and frequently narrowed at either end. The crown is slightly enlarged, finely annulate, and marked above with projecting fibers. The center is hollow or it contains a tuft of white unicellular hairs. The surface is rough and wrinkled, occasionally longitudinally furrowed. The texture is resinous. The fracture is strong, tough and uneven. The outline is irregular and wavy. The cortex is resinous and dark yellowish brown. The wood is light yellow and marked with dark yellow radiating bands of tissue. The odor is aromatic. The taste is sweet, pungent, acrid and tingling.

**Constituents:** Volatile oil, pyrethrin, tannin, gum, fat, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Tinctura Pyrethri (used externally).

## LAPPA—AMERICAN

1, Curved root with a crown and leaf bases. 2, Twisted root with a finely furrowed surface. 3, Longitudinal section showing partially hollow pith. 4, White hairs in center of the crown. 5, Larger crown showing concentric ridges. 6, White pith.

## LAPPA N. F.

### (1) American Lappa

**English name:** Lappa.

**Synonyms:** Burdock Root, American Burdock.

**Botanical origin:** *Arctium minus*. (Fam. *Compositæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Europe and United States.

#### **Description:**

American lappa occurs as a mixture of entire, curved or twisted roots, as longitudinal slices, and as broken pieces. The roots are simple or branched, and they measure up to 25 cm. in length and up to 15 mm. in diameter. The crown is scaly, slightly annulate, and hollow above. The cavity is filled either with unicellular hairs of undeveloped leaves or with partially developed leaves. The texture is fibrous. The color varies from light grayish yellow to dark brown and is rarely abraded. The surface is finely furrowed and has few elevated root scars. The fracture is brittle and uneven. The outline of cross-sections is nearly circular. The cortex is yellowish brown and distinctly radiate. The wood has distinct yellowish radial conducting tissue near the cambium zone and a hollow or solid pith center. The odor is not characteristic. The taste is slightly sweet, mucilaginous and bitter.

**Constituents:** Volatile oil, tannin, bitter principle, inulin, sugar, fat, mucilage, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Lappæ. Dose, 2 mils (30 min.).

## **LAPPA—EUROPEAN**

1, Crown with tuft of white hairs. 2, Longitudinal section showing the white pith and the incurved edges of the cortex. 3, Small curved root. 4, Large transverse section. 5, Small transverse section.

## LAPPA N. F.

### (2) European Lappa

**English name:** Lappa.

**Synonyms:** Burdock Root, Foreign Burdock, European Burdock.

**Botanical origin:** *Arctium Lappa* Linné. (Fam. *Compositæ*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None mentioned.

**Ash:** Not more than 6 per cent.

**Habitat:** Europe and Northern Asia; sparingly naturalized in the United States, mostly in the Eastern States.

#### **Description:**

European lappa occurs as entire roots, as longitudinal, and as transverse slices or root. The entire roots are usually simple. They measure up to 30 cm. in length and up to 25 mm. in diameter. The crown is slightly annulate, hollow above and frequently filled with unicellular hairs of partially developed leaves. The texture is resinous and horny. The color is grayish brown or white where the surface has been abraded. The surface is irregularly longitudinally furrowed, and has slightly elevated root scars. The fracture is very brittle and uneven. The outline of cross-sections of entire roots is cylindrical; of cut slices, irregular. The cortex, which is yellowish gray or brown, is thin and slightly radiate. The cambium zone is blackish brown. The wood is yellowish white near the cambium and radiate. The pith is white and cleft or solid. The odor is not characteristic. The taste is sweet, mucilaginous and slightly bitter.

**Constituents:** Volatile oil, tannin, bitter principle, inulin, sugar, fat, mucilage, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Lappæ; Dose, 2 mils (30 min.).

## **BELLADONNAE RADIX**

1. Large root with a finely wrinkled and abraded surface.
2. Stem of the plant.
3. White abraded surface.
4. Dark cambium separating the cortex and wood.
5. White starchy wood.
6. Dark resinous wood.

# **BELLADONNÆ RADIX (Bellad. Rad.) U. S. P.**

**English name:** Belladonna Root.

**Synonyms:** Deadly Nightshade Root.

**Botanical Origin:** *Atropa Belladonna* Linné. (Fam. *Solanaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 10 per cent. of its stem bases or other foreign matter.

**Assay:** Not less than 0.45 per cent. of the total alkaloids of Belladonna Root.

**Ash:** Not more than 7 per cent.

**Habitat:** Southern and Central Europe; cultivated in Germany, England, and the United States.

## **Description:**

Belladonna root occurs as entire or broken fragments, or as longitudinal sections, which vary in length up to 30 cm. and in diameter up to 2.7 cm. Stem bases are frequently present. They are woody, hollow, annulate and wrinkled. The roots are simple or branched. The texture is starchy, resinous and slightly fibrous. The color is grayish brown. The surface is longitudinally wrinkled with numerous white patches where the surface has been abraded. The fracture is weak, brittle, and even. The outline of entire roots is cylindrical; of cut roots, very irregular. The cortex is thick, white and starchy, or resinous and dark gray. Most sections show a dark zone in the region of the cambium. The wood is yellow and radiate. The pith is very thick and starchy. The odor is not characteristic. The taste is sweet, bitter and acrid.

**Constituents:** Starch, albumin, atrosin, alkaloids (atropine, hyoscyamine, scopolamine, etc.), etc.

**Dose:** 0.045 Gm. ( $\frac{3}{4}$  grain).

## **Preparations:**

Fluidextractum Belladonnæ Radicis; Dose, 0.05 mil (1 min.).  
Linimentum Belladonnæ (from fluidextract).

## **PETROSELINI RADIX**

1. Longitudinal section with recurved cortex and ridge of pith. 2. Annulate surface. 3. Transverse section showing round resin cavities.

## PETROSELINI RADIX (Petrosel. Rad.) N. F.

**English name:** Parsley Root.

**Synonyms:** Garden Parsley, Common Parsley.

**Botanical origin:** *Petroselinum sativum* Hoffmann.  
(Fam. *Umbelliferae*.)

**Part used:** Root.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Southern Europe; cultivated quite universally.

entire, longitudinally cut, and as broken up to 25 cm. and in diameter up to 8 cm. ed, annulate, and scaly. The roots are ture is non-fibrous. The color is light *surface* is interruptedly annulate, the root scars are elevated and slightly The fracture is very weak, brittle and pliable when moist. The outline varies to very irregular. Sections of longitudinal wood portion and incurved margins ex is yellow brown, and it has scattered ties with resin. The wood is light yellow sin cavities. The odor is aromatic. The nt.

arch, sugar, volatile oil, etc.

s).

al Radicis; Dose, 2 mils (30 min.).

## **SENEGA**

1. Crown with numerous stem bases. 2. Branch at right angles to the main root. 3. Surface view of the crown. 4. Keel. 5. Broken root. 6. Undeveloped part of wood which is typical of senega.

## SENEGA (Seneg.) U. S. P.

**English name:** Senega.

**Synonyms:** Seneca Snakeroot, Senega Snakeroot.

**Botanical origin:** *Polygala Senega* Linné. (Fam. *Polygalaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. stems and other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Canada, Eastern United States west to Canadian Rockies and south to Arkansas and North Carolina.

**Description:**

Senega occurs in broken pieces, varying in length up to 29 cm. and in diameter up to 11 mm. at the crown. The crown bears generously, having often as many as 40 stem bases. The stems are of variable length, and they have numerous purple scales. The surface of the crown is purplish black. The root is usually branched and twisted, and the branches frequently grow out at right angles. On a few of the roots there is a keel, or ridge, which extends a short distance from the crown. In many of the roots the wood is exposed, owing to the removal of the cortex. The texture is resinous and woody. The color varies from brownish yellow to blackish yellow. The surface is annulate near the crown and in the region of the root branches; other parts of the surface are longitudinally wrinkled. The fracture is very weak, brittle and uneven. The outline is cylindrical and wavy. The cortex is thin and yellowish brown. The wood is light yellow, and in places undeveloped and finely porous. The odor is slight. The taste is sweet and acrid.

**Constituents:** Saponin, polygalic acid, senegin, resin, fat, sugar, oil (fixed and volatile), etc.

**Dose:** 1 Gm. (15 grains).

**Preparations:**

Fluidextractum Senegæ; Dose, 1 mil (15 min.).

Syrupus Scillæ Compositus (from fluidextract); Dose, 2 mils (30 min.).

Syrupus Senegæ (from fluidextract); Dose, 4 mils (1 fl. dr.).

## **CALUMBA**

1, Oblique section showing cambium zone and radiate wood. 2, Longitudinal section. 3, Transverse section of cut root. 4, Wrinkled outer surface of the root. 5, Radiate ridges common in the drug of commerce.

## **CALUMBA (Calumb.) U. S. P.**

**English name:** Calumba.

**Synonyms:** Columba, Columbo, Colombo.

**Botanical origin:** *Jateorhiza palmata* (Lamarck)  
Miers. (Fam. *Menispermaceæ*.)

**Part used:** Root.

**Impurities:** None given in Pharmacopœia.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Eastern Africa; also cultivated.

### **Description:**

Calumba occurs as transverse, oblique, and as longitudinal slices. These sections are usually entire. They measure up to 8 cm. in diameter and up to 12 mm. in thickness. The texture is fibrous and starchy. The color is dark reddish, yellowish, or greenish brown. The surface is irregularly wrinkled. The fracture is brittle and even. The outline of the transverse slices is circular; of the oblique slices, oval; of the longitudinal slices, rectangular. The cortex is thick. The thin outermost layer is brown, and the remaining part of the cortex is greenish yellow except near the cambium ring, where it is yellowish gray. This inner layer frequently has dark radiating lines of tissue. The wood is dark yellowish green near the cambium, and has dark, interrupted lines of conducting tissue. The central portion is greenish yellow with a few scattered masses of conducting tissue. The odor is not distinct. The taste is very bitter.

**Constituents:** Alkaloids, starch, pectin, gum, resin, fat, volatile oil, wax, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Calumbæ N. F.; Dose, 2 mils (30 min.).  
Tinctura Calumbæ; Dose, 4 mils (1 fl. dr.).

## BRYONIA

1. Large transverse section. 2. Longitudinal section. 3. Section showing prominent concentric and radiate ridges. 4. Small transverse section. 5. Wrinkled surface with the cortex curved back from the cut surface.

## **BRYONIA (Bryon.) N. F.**

**English name:** Bryonia.

**Synonyms:** Wild Bryony, Bryony Root.

**Botanical origin:** *Bryonia alba* Linné or *Bryonia dioica* Jacq. (Fam. *Cucurbitaceæ*.)

**Part used:** Root.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Central and Southern Europe.

### **Description:**

Bryonia occurs as transverse, oblique, and as longitudinal slices. These pieces measure up to 11 cm. in width and up to 16 mm. in thickness. The texture is starchy. The color is grayish yellow or grayish brown. The surface is irregularly wrinkled. The fracture is very brittle and even. The outline is circular in transverse, oval in oblique, and rectangular in longitudinal sections. The cortex is thin and brownish yellow. The wood is white or yellowish white. The wood forms concentric and radiating zones. The odor is slight. The taste is bitter and nauseating.

**Constituents:** Starch, gum, sugar, fat, glucosides (bryonin, bryonidin), resin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Tinctura Bryonie; Dose, 4 mils (1 fl. dr.).

Rhubarb in wooden case covered with yellow tissue paper  
painted red at the border. Inside the case is an inner tin  
or zinc which is hermetically sealed.

## CHAPTER II

# RHIZOMES

**I**N the study of rhizomes the following must be considered: Occurrence, size, type, nature, stem and leaf scars and bases, texture, color, surface, tenacity, fracture, outline, cortex, cambium or endodermis, wood or central cylinder, pith, odor and taste.

**1. Occurrence.** Rhizomes are entire, as in geranium; or broken, as in blue flag; or cut transversely, as in zedoaria and in galangal; or cut longitudinally, as in blue flag.

**2. Size.** The size of rhizomes varies in length from 8 cm., as in *Virginia serpentaria*, to 8.5 dm., as in some of the unbroken rhizomes of wild yam. The diameter varies from one millimeter, as in *Virginia snake-root*, to 5 cm., as in *zedoaria*.

**3. Type.** All the rhizomes are horizontal except *trillium*, which is frequently oblique.

**4. Nature.** Rhizomes are simple, as in *trillium* and some of the rhizomes of *geranium*. All the other rhizomes are branched.

**5. Stem and Leaf Scars and Bases.** Stem bases or scars of stems are diagnostic in most rhizomes. Their distinctness, size, position—whether above, even with, or below the surface of the rhizome—and their distance apart must be considered. The stem scars on the branches of all the gingers are sunken, laterally constricted; the stem scars on *geranium* and wild yam are indistinct. The leaf scars on Florentine orris root are distinct. American male fern consists largely of stipe bases.

**6. Texture.** The texture is resinous, as in a good quality of any of the gingers; fibrous, as in wild yam and galangal; starchy, as in *geranium*; oily and starchy, as in *trillium*.

**7. Color.** The more common colors are grays, yellows, and browns, which are combined to form the characteristic colors of the different drugs. The color of each drug is given under the description.

**8. Surface.** The surface of wild yam is nodulated; that of galangal, blue flag, orris root, the unpeeled portion of gingers and trillium is annulated; that of Jamaica ginger is smooth.

**9. Tenacity.** By tenacity is meant the resistance which a rhizome offers to tearing and pulling stresses. The six classes are as follows: Very weak brittle; weak brittle, brittle, tough, strong tough and very strong tough. Very weak brittle: There are no rhizomes which come under this class. Weak brittle: Male fern (American and European). Brittle: The brittle rhizome is blue flag. Tough: All the gingers. Strong tough: Geranium and beth root. Very strong tough: Wild yam, orris roots, and galangal belong to this class.

**10. Fracture.** The fracture is even, as in orris root; uneven, as in the gingers, etc.

**11. Outline of Transverse Sections.** The outline of most rhizomes is nearly cylindrical. In the gingers, the outline is oval.

**12. Cortex.** The cortex may be thin, as in African ginger and in geranium; thick, as in blue flag, orris roots and zedoary; very thick, as in galangal and beth root. The color of the cortex is characteristic for each drug. The markings are not distinct in the cortex of any of the rhizomes except beth root, which has many cavities formed by decayed roots.

**13. Endodermis.** The endodermis is distinct in most of the rhizomes when they are freshly cut.

**14. Central Cylinder.** The central cylinder of Florentine orris root and most of the other rhizomes shows scattered bundles of conducting tissue. Zedoary has numerous dark resin cavities with resin. In wild yam and zedoary the bundles are not distinct.

**15. Pith.** The pith is not distinct in most of the rhizomes.

16. **Odor.** The gingers, orris roots, galangal and zedoary are *strongly aromatic*; beth root is *slightly aromatic*; wild yam, blue flag, geranium, and the aspidiums are not odorous.

17. **Taste.** All the gingers, orris root, zedoary and galanga are pungent; geranium is astringent; wild yam is starchy and acrid; beth root is sweet, bitter and acrid; male fern is sweet, astringent and acrid; orris roots are sweet, pungent and acrid.

## **DIOSCOREA**

1, Portion of stem attached to the rhizome and a rhizome which is branched and nodulated. 2, Wiry slender rootlets. 3, Cut woody surface. 4, Cross-section showing thin cortex.

## **DIOSCOREA (Diosc.) N. F.**

**English name:** Dioscorea.

**Synonyms:** Wild Yam Root, Yam Root.

**Botanical origin:** *Dioscorea villosa* Linné. (Fam. *Dioscoreaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Canada; Eastern, Central, and Southern United States.

### **Description:**

Wild yam occurs as broken pieces of the rhizome. The rhizomes are branched. They measure up to 70 cm. in length and up to 10 mm. in diameter. The rhizome is horizontal, and the younger part frequently bears a portion of the slender, striated, twisted stem. The texture is fibrous. The color varies from light to dark yellow. The upper surface is marked with circular, slightly depressed stem scars or with nodular projections, and has a short stem base with long and short rootlets. The under surface has nodular projections and rootlets, and, like the upper surface, it is finely striated longitudinally. The fracture is very tough and even. The outline is nearly cylindrical. The cross-section is grayish white, and shows, when magnified, yellow conducting tissue. The odor is not distinct. The taste is starchy and acrid.

**Constituents:** Resin, starch, saponin, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum *Dioscoreæ*; Dose, 4 mils (1 fl. dr.).

## **IRIS VERSICOLOR**

1. Outer surface of a typical rhizome. 2. Leaf bases. 3. Transversely wrinkled roots. 4. Root scar. 5. Central cylinder showing scattered conducting tissue.

## **IRIS VERSICOLOR (Iris Vers.) N. F.**

**English name:** Blue Flag.

**Synonyms:** Iris Root.

**Botanical origin:** *Iris versicolor* Linné. (Fam. *Iridaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** Not more than 5 per cent. of roots and leaf bases.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Eastern North America and Central United States.

### **Description:**

Blue flag occurs as entire rhizomes, or as longitudinal slices, or as broken pieces. The rhizomes are simple or branched, and they measure up to 15 cm. in length and up to 18 mm. in diameter. The rhizome is horizontal and no stem scars are present; the rhizome is the stem. The texture is slightly starchy and fibrous. The color varies from gray to purplish brown. The upper surface has many dark, obliquely annulate leaf scars with scattered masses of conducting tissue. The surface between the scars is wrinkled longitudinally. The under surface has numerous fine, transversely wrinkled roots or circular depressed root scars. The fracture is brittle and uneven. The outline of the sections is cylindrical or irregular. The cortex is purplish brown, thick, and finely porous. The endodermis is yellowish white, and the central cylinder is purplish and has numerous scattered yellowish masses of conducting tissue. The odor is not characteristic. The taste is sweet, astringent and acrid.

**Constituents:** Starch, gum, tannin, oil, sugar, resin, glucoside (iridin), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Iridis Versicoloris; Dose, 2 mils (30 min.).

## **IRIS—FLORENTINE**

1, Branched rhizome. 2, Root scars on the under surface.  
3, Indistinct annulations. 4, Transverse section showing  
thick cortex. 5, Section showing conducting tissue in scat-  
tered masses.

## **IRIS N. F.**

### **(1) Florentine Orris**

**English name:** Orris.

**Synonyms:** Orris Root, Florentine Orris Root.

**Botanical origin:** *Iris florentina* Linné. (Fam. *Iridaceæ*.)

**Part used:** Rhizome freed from roots, and peeled and dried.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not less than 2 per cent. nor more than 5 per cent.

**Habitat:** Eastern Mediterranean region, Northern Africa; cultivated in Europe for the drug, in the United States for the flower.

#### **Description:**

Florentine orris occurs as entire or broken pieces of the completely peeled rhizome. The rhizome is simple or branched, and the branches are broad at the end but narrow at the point of origin from the main rhizome. They measure up to 12 cm. in length and up to 4 cm. in width and a maximum thickness of 2 cm. The rhizome is horizontal and free of stems or stem scars. The texture is starchy and non-fibrous. The color is whitish yellow. The upper surface is annulate with leaf scars showing the circular parallel rows of conducting tissue. The under surface has numerous circular depressed root scars or circular slightly projecting cut portions of roots. The fracture is very strong, tough and even. The outline of cross-sections is circular or oval, and has a slightly irregular edge. The cortex is thick and grayish white. The endodermis is distinct and yellowish. The central cylinder has numerous circular isolated masses of conducting tissue, which are more numerous near the endodermis. The odor is fragrant and aromatic. The taste is slightly sweet, bitter and pungent.

**Constituents:** Ionone, starch, resin, tannin, volatile oil, etc.

**Dose:** Not used therapeutically.

#### **Preparations:**

None.

## **IRIS—VERONA**

1, Large rhizome showing under surface and numerous root scars. 2, Leaf bases 3, Portion of unpeeled surface. 4, Cortex. 5, Large, frequently dark, central cylinder.

## **IRIS N. F.**

### **(2) Verona Orris**

**English name:** Orris.

**Synonyms:** Orris Root, Verona Orris Root.

**Botanical origin:** *Iris germanica* Linné, *Iris pallida* Lamarck. (Fam. *Iridaceæ*.)

**Part used:** Rhizome freed from roots, and peeled and dried.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not less than 2 per cent. nor more than 5 per cent.

**Habitat:** Eastern Mediterranean region, Northern Africa; cultivated in Europe for the drug, in the United States for the flower.

#### **Description:**

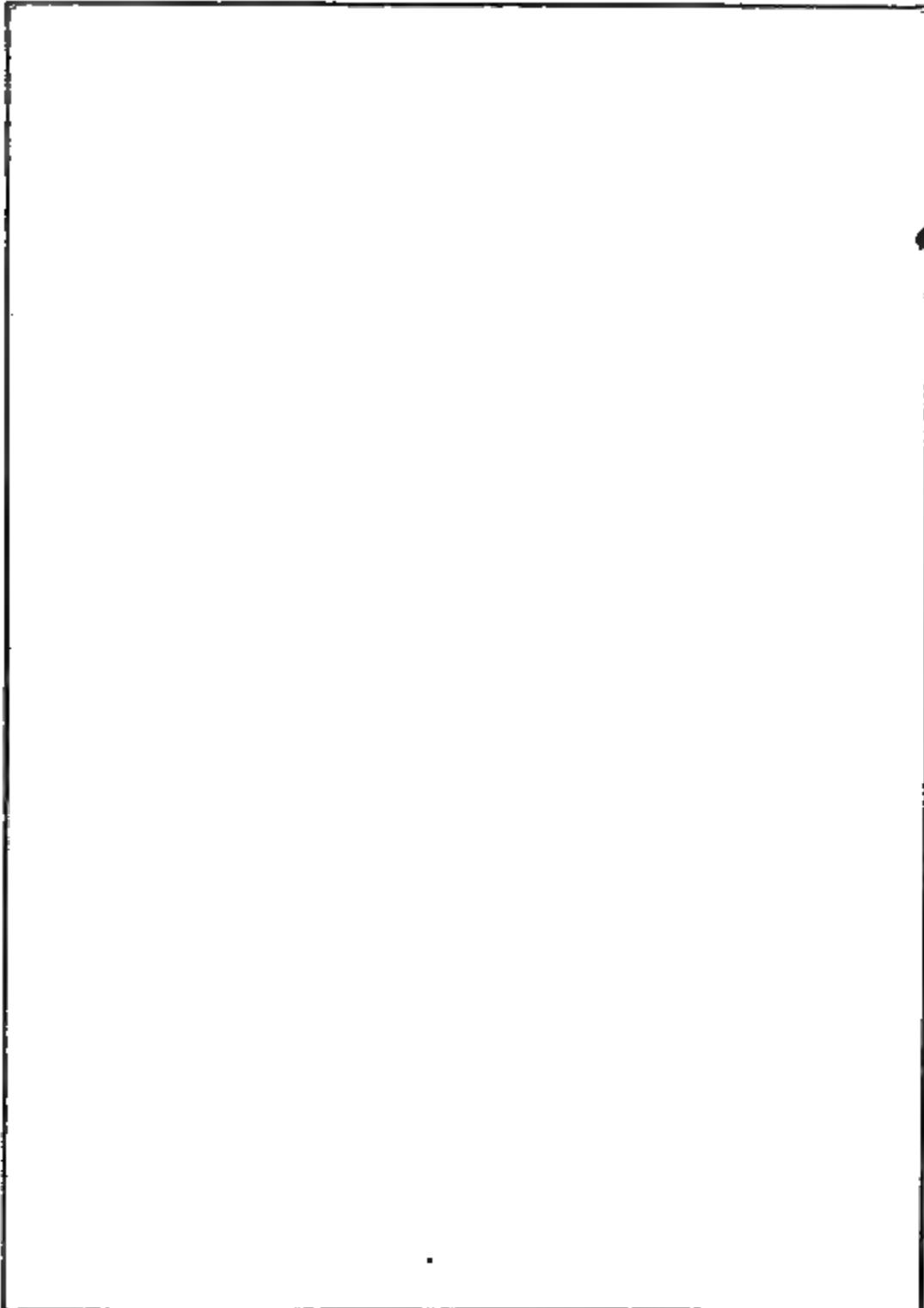
Verona orris occurs as entire or broken pieces of the partially peeled rhizome. The rhizome is branched, but the commercial drug consists largely of separated branches, or it is simple. The root measures up to 14 cm. in length and up to 3 cm. in diameter, and a maximum thickness of 15 mm. It is horizontal and free of stem bases and scars. The *texture* is starchy and non-fibrous. The *color* of the unpeeled surface is orange-yellow, that of the peeled surface grayish yellow. The *upper surface* is rough; this roughness is caused by careless paring. The surface has patches of orange-yellow periderm or numerous whitish concentric leaf bases. The *under surface* has numerous circular depressed root scars or circular, slightly projecting, cut portions of roots. The *fracture* is very strong, tough, and even. The *outline* is broadly oval and wavy. The *cortex* is thin and grayish white. The *endodermis* is distinct and yellowish, and the circular masses of conducting tissue are scattered throughout the stele, which is greenish yellow to brown. The *odor* is fragrant and aromatic. The *taste* is slightly sweet, bitter and pungent.

**Constituents:** Ionone, starch, resin, tannin, volatile oil, etc.

**Dose:** Not used therapeutically.

#### **Preparations:**

None.



## **GERANIUM**

1. A branched rhizome with a strongly nodulated surface.
2. Stem scar.
3. Nodule.
4. Cross-section of the rhizome.

## **GERANIUM (Geran.) N. F.**

**English name:** Geranium.

**Synonyms:** Wild Geranium, Cranesbill.

**Botanical origin:** *Geranium maculatum* Linné. (Fam. *Geraniaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Eastern and Central North America, and Middle Western United States.

### **Description:**

Geranium rhizome occurs as a mixture of entire and broken pieces. The rhizome is simple or branched, and it measures up to 11 cm. in length and up to 15 mm. in width. It is horizontal and is marked with circular, slightly depressed stem scars. The texture is starchy and waxy. The color is dark yellowish or reddish brown. The upper surface has many circular stem scars and is prominently nodulated. Between the nodules the rhizome is annulate with transverse ridges. The under surface and sides are nodulated and annulated. The fracture is strong, tough, and even. The outline is irregularly oval. The cortex is thick and purplish brown. The cambium zone is prominent and darker than the remaining portion of the surface. The wood has isolated yellowish masses of conducting tissue near the cambium. The pith makes up the greater part of the rhizome and is grayish purple. The odor is indistinct. The taste is strongly astringent.

**Constituents:** Tannin, gallic acid, resin, pectin, sugar, geranium red, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Geranii; Dose, 1 mil (15 min.).

## **GERANIUM**

1. A branched rhizome with a strongly nodulated surface.  
2. Stem scar. 3. Nodule. 4. Cross-section of the rhizome.

## **GERANIUM (Geran.) N. F.**

**English name:** Geranium.

**Synonyms:** Wild Geranium, Cranesbill.

**Botanical origin:** *Geranium maculatum* Linné. (Fam. *Geraniaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Eastern and Central North America, and Middle Western United States.

### **Description:**

Geranium rhizome occurs as a mixture of entire and broken pieces. The rhizome is simple or branched, and it measures up to 11 cm. in length and up to 15 mm in width. It is horizontal and is marked with circular, slightly depressed stem scars. The texture is starchy and waxy. The color is dark yellowish or reddish brown. The upper surface has many circular stem scars and is prominently nodulated. Between the nodules the rhizome is annulate with transverse ridges. The under surface and sides are nodulated and annulated. The fracture is strong, tough, and even. The outline is irregularly oval. The cortex is thick and purplish brown. The cambium zone is prominent and darker than the remaining portion of the surface. The wood has isolated yellowish masses of conducting tissue near the cambium. The pith makes up the greater part of the rhizome and is grayish purple. The odor is indistinct. The taste is strongly astringent.

**Constituents:** Tannin, gallic acid, resin, pectin, sugar, geranium red, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Geranii; Dose, 1 mil (15 min.).

## **ZINGIBER—JAMAICA**

**1.** A typical branched peeled rhizome. **2.** Small rhizome.  
**3.** Stem scar.

## ZINGIBER (Zingib.) U. S. P.

### (1) Jamaica Ginger

**English name:** Ginger.

**Synonyms:** Jamaica Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. Zingiberaceæ.)

**Part used:** Rhizome.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in West Indies.

#### Description:

Jamaica ginger occurs as a mixture of irregularly branched rhizomes and broken pieces. All surfaces are completely peeled. The rhizomes measure up to 12 cm. in length, up to 3.5 cm. in height, and up to 1 cm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy, resinous and fibrous. The color of all surfaces is yellowish brown. The upper surface has several branches which terminate in sunken stem scars. All the surfaces are striated longitudinally, and have a few projecting thread-like strands of conducting tissue. The under surface frequently has short, undeveloped branches, or longer branches which normally continue the growth of the rhizome. The fracture is brittle and uneven. The outline is oval. This is caused by lateral compression. The cortex is thin. The endodermis is yellowish and encloses the large stele; it has scattered masses of conducting tissue and resin cavities with resin. The color is light yellow. The odor is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. dr.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## **ZINGIBER—JAMAICA**

**1.** A typical branched peeled rhizome. **2.** Small rhizome.  
**3.** Stem scar.

## ZINGIBER (Zingib.) U. S. P.

### (1) Jamaica Ginger

**English name:** Ginger.

**Synonyms:** Jamaica Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in West Indies.

#### Description:

Jamaica ginger occurs as a mixture of irregularly branched rhizomes and broken pieces. All surfaces are completely peeled. The rhizomes measure up to 12 cm. in length, up to 3.5 cm. in height, and up to 1 cm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy, resinous and fibrous. The color of all surfaces is yellowish brown. The upper surface has several branches which terminate in sunken stem scars. All the surfaces are striated longitudinally, and have a few projecting thread-like strands of conducting tissue. The under surface frequently has short, undeveloped branches, or longer branches which normally continue the growth of the rhizome. The fracture is brittle and uneven. The outline is oval. This is caused by lateral compression. The cortex is thin. The endodermis is yellowish and encloses the large stele; it has scattered masses of conducting tissue and resin cavities with resin. The color is light yellow. The odor is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. dr.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## **ZINGIBER—JAMAICA**

**1.** A typical branched peeled rhizome. **2.** Small rhizome.  
**3.** Stem scar.

## ZINGIBER (Zingib.) U. S. P.

### (1) Jamaica Ginger

**English name:** Ginger.

**Synonyms:** Jamaica Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in West Indies.

#### Description:

Jamaica ginger occurs as a mixture of irregularly branched rhizomes and broken pieces. All surfaces are completely peeled. The rhizomes measure up to 12 cm. in length, up to 3.5 cm. in height, and up to 1 cm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy, resinous and fibrous. The color of all surfaces is yellowish brown. The upper surface has several branches which terminate in sunken stem scars. All the surfaces are striated longitudinally, and have a few projecting thread-like strands of conducting tissue. The under surface frequently has short, undeveloped branches, or longer branches which normally continue the growth of the rhizome. The fracture is brittle and uneven. The outline is oval. This is caused by lateral compression. The cortex is thin. The endodermis is yellowish and encloses the large stele; it has scattered masses of conducting tissue and resin cavities with resin. The color is light yellow. The odor is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. dr).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## ZINGIBER—AFRICAN

1, A branched rhizome. 2, Unpeeled portion of the rhizome. 3, Small rhizome. 4, Stem scar. 5, Cross-section showing small resin cells.

## ZINGIBER (Zingib.) U. S. P.

### (2) African Ginger

**English name:** Ginger.

**Synonyms:** African Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given in Pharmacopœia.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether, and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in tropical Africa.

#### Description:

African ginger occurs as a mixture of irregular, branched, entire rhizomes, and as broken pieces. The flat surfaces are mostly peeled. The rhizomes measure up to 9 cm. in length, up to 2.5 cm. in height and up to 1.5 cm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy and fibrous. The color of the uncut surface is dark grayish brown, that of the cut surface brownish black. The upper surface has many short and long branches with prominent terminal stem scars with cork. The under surface, which frequently has branches which in turn branch, has patches of cork. The fracture is brittle and uneven. The outline is nearly circular or broadly oval. The cortex is thin and yellowish brown. The endodermis is dark brown. The stele is large and has numerous separated masses of conducting cells and reddish resin cells with resin. The odor is aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{4}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. drs.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## **ZINGIBER—CALICUT**

1, A large branched rhizome. 2, Broad type of rhizome.  
3, Stem scar. 4, Small rhizome. 5, Cross-section of rhizome  
showing resin cells.

## **ZINGIBER (Zingib.) U. S. P.**

### **(3) Calcutta Ginger**

**English name:** Ginger.

**Synonyms:** Calcutta Ginger, Race Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given officially.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in India.

#### **Description:**

Calcutta ginger occurs as irregular, branched, entire rhizomes, and as broken pieces. The flat surfaces are partially or completely peeled. The rhizomes measure up to 7 cm. in length, to 3 cm. in height and to 15 cm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy, resinous and fibrous. The color of the uncut surface is grayish brown, that of the cut surface bluish. The upper surface has many short and long branches with prominent terminal sunken stem scars. The under surface has several long, incompletely developed branches with cork. The fracture is brittle and uneven. The outline is broadly oval. The cortex is thin and darker than the remaining part of the rhizome. The endodermis is yellowish. The stele is large and has numerous separated masses of conducting cells, and resin cavities with resin. The odor is aromatic. The taste is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. drs.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## ZINGIBER—CALCUTTA

1. Branched rhizome. 2, Unbranched rhizome. 3, Annulate leaf scar. 4, Transverse section showing resin cells. 5, Stem scar.

## ZINGIBER (Zingib.) U. S. P.

### (4) Calicut Ginger

**English name:** Ginger.

**Synonyms:** Calicut Ginger, Lemon Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given in Pharmacopœia.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated on west coast of Africa.

#### Description:

Calicut ginger occurs as irregular, branched, entire rhizomes, and as broken pieces. The flat surfaces are mostly peeled. The rhizomes measure up to 8 cm. in length, to 2.8 cm. in height and to 13 mm. in width. The rhizome is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy and fibrous. The color of the uncut surface is dark yellow, orange, or reddish brown; of the cut surface, grayish brown. The upper surface has short and long branches with prominent sunken stem scars. The under surface has many undeveloped branches with cork patches. The fracture is brittle and uneven. The outline varies from oval to circular. The cortex is thin. The endodermis is indistinct. The stele is large and has large scattered masses of brownish conducting strands and small yellow resin cavities with resin. The odor is aromatic. The taste is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. drs.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## ZINGIBER—COCHIN

1, Branched rhizome. 2, Large branch. 3, Cross-section of rhizome showing resin cells. 4, Stem scar.

1

## ZINGIBER (Zingib.) U. S. P.

### (5) Cochin Ginger

**English name:** Ginger.

**Synonyms:** Cochin Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in China.

#### Description:

Chinese ginger occurs as a mixture of irregular, branched, entire rhizomes, and as broken pieces. The flat surfaces are partially or completely peeled. The rhizomes measure up to 6.7 cm. in length, to 3.5 cm. in height and to 12 mm. in diameter. The rhizome is horizontal; the ends of the branches have circular or oval sunken stem scars. The texture is starchy and fibrous. The color of the uncut surface is light gray or yellowish brown; of the cut surface, light grayish yellow. The upper surface has long and short branches with sunken stem scars and patches of cork. The under surface has branches of variable length with cork patches. The fracture is brittle and uneven. The outline is broadly oval. The cortex is thin. The endodermis is light brown. The stele is large and has numerous separated strands of conducting tissue and yellow resin cavities with resin. The odor is aromatic. The taste is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### Preparations:

Fluidextractum Aromaticum (from aromatic powder); Dose, 1 mil (15 min.).

Fluidextractum Zingiberis; Dose, 1 mil (15 min.).

Oleoresina Zingiberis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains).

Syrupus Zingiberis (from fluidextract); Dose, 15 mils (4 fl. drs.).

Tinctura Zingiberis; Dose, 2 mils (30 min.).

## **ZINGIBER—JAPANESE**

**1.** Large branched rhizome. **2.** Simple rhizome. **3.** Small rhizome. **4.** Stem scar. **5.** Section showing resin cells.

## **ZINGIBER (Zingib.) U. S. P.**

### **(6) Japanese Ginger**

**English name:** Ginger.

**Synonyms:** Japanese Ginger.

**Botanical origin:** *Zingiber officinale* Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Rhizome.

**Impurities:** None given officially.

**Assay:** Not less than 2 per cent. of a non-volatile extract soluble in ether and not less than 4 per cent. of an extract soluble in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:** Cultivated in Japan.

#### **Description:**

Japanese ginger occurs as a mixture of irregular, branched, entire rhizomes, and of broken pieces. The flat surfaces are usually completely peeled. The rhizome measures up to 7 cm. in length, to 2.8 cm. in height and to 12 mm. in width. It is horizontal, and the ends of the branches have circular or oval sunken stem scars. The texture is starchy and fibrous. The color of the uncut and cut surfaces is grayish white, owing to a thin coating of lime. The upper surface has short, broad branches with a terminal constricted stem scar and with patches of cork. The under surface has short or long branches with adhering cork. The fracture is brittle and uneven. The outline is broadly oval. The cortex is thick. The endodermis is dark brown. The stele is large and has numerous very small separated masses of conducting cells and yellowish resin cavities with resin. The odor is aromatic. The taste is strongly aromatic and pungent.

**Constituents:** Volatile oil, starch, gum, fat, acrid resin, gingerol, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

**Fluidextractum Aromaticum** (from aromatic powder); Dose, 1 mil (15 min.).

**Fluidextractum Zingiberis**; Dose, 1 mil (15 min.).

**Oleoresina Zingiberis**; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

**Pulvis Aromaticus**; Dose, 1 Gm. (15 grains).

**Pulvis Rhei Compositus**; Dose, 2 Gm. (30 grains).

**Syrupus Zingiberis** (from fluidextract); Dose, 15 mils (4 fl. drs.).

**Tinctura Zingiberis**; Dose, 2 mils (80 min.).



## GALANGA

1. Annulate, wavy leaf bases or scars.
2. Simple rhizome.
3. Branched rhizome.
4. Transverse section of rhizome showing scattered circular conducting strands.

## GALANGA (Galang.) N. F.

**English name:** Galanga.

**Synonyms:** Galangal, East India Root.

**Botanical origin:** *Alpinia officinarum* Hance (Fam. Zingiberaceæ.)

**Part used:** Dried rhizome.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** China; cultivated in Asia.

### Description:

Galanga rhizome occurs as long, transverse pieces. The rhizome is branched. The branches may be separated. They measure up to 11.5 cm. in length and to 2 cm. in diameter. The rhizome is horizontal. The texture is fibrous. The color is dark reddish or cinnamon brown. The surface is annulate with numerous light yellow, wavy leaf bases. The fracture is strong, tough and uneven. The outline is irregularly circular. The diameter of the cut ends is greater than the central portion. This is caused by the tissues bending outward. The cortex is thick and has no distinctive markings. The endodermis is indistinct and encloses a large stele with scattered masses of conducting tissue. The odor is aromatic. The taste is aromatic and pungent, resembling pepper.

**Constituents:** Volatile oil, resin, gum, starch, fixed oil, crystalline principles, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

None.

## ZEDOARIA

1. Large transverse section of the rhizome. 2. Longitudinal section of the rhizome. 3. Top of the rhizome showing concentric leaf scars. 4. Cross-section showing sunken tissue inside endodermis. 5. Projecting woody conducting strands. 6. Wrinkled outer surface of the rhizome.

## **ZEDOARIA (Zedoar.) N. F.**

**English name:** Zedoary.

**Synonyms:** Zedoary Root.

**Botanical origin:** *Curcuma Zedoaria* (Bergius) Roscoe. (Fam. *Zingiberaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** None given.

**Assay:** None given.

**Ash:** 7 per cent. or less.

**Habitat:** East Indies.

### **Description:**

Zedoary occurs as a mixture of transverse and longitudinal slices of the rhizome. The slices measure up to 5 cm. in diameter and to 15 mm. in thickness. The rhizome is vertical. The texture is resinous and starchy. The color of the uncut surface is yellowish or reddish brown. The edge (uncut surface) of the slices is wrinkled and has several root scars, from the center of which project short woody conducting strands. The fracture is brittle and even. The cortex is thick and grayish yellow, and it has scattered brown resin cavities with resin. The endodermis is yellowish white, on either side of which the tissues are dark. The stele is grayish brown, and it has great numbers of brown resin cavities with resin. The odor is aromatic and is suggestive of camphor. The taste is pungent and bitter.

**Constituents:** Starch, gum, bitter extractive, resin, volatile oil, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Tinctura Zedoariæ Amara N. F.; Dose, 4 mils (1 fl. dr.).

## **ASPIDIUM—AMERICAN**

1, Large rhizome with stipe bases, roots and scales. 2, Cross section of stipe base showing conducting strands. 3, Worthless upper part of stipe. 4, Stipe bases separated from the rhizome.

## **ASPIDIUM (Aspid.) U. S. P.**

### **(1) American Aspidium**

**English name:** Aspidium.

**Synonyms:** American Male Fern.

**Botanical origin:** *Dryopteris marginalis* (Linné) Asa Gray. (Fam. *Polypodiaceæ*.)

**Part used:** Rhizome and stipes.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Most of North America.

#### **Description:**

American male fern occurs as entire rhizomes with attached stipes, scales and roots. The rhizomes measure up to 10 cm. in length, to 6 cm. in width and to 7 cm. in height. The rhizome is horizontal and is simple. The stipe bases are curved and scaly below. The texture is soft and slightly fibrous. The color is brownish black. The surface of stipes is longitudinally wrinkled but smooth. The roots are brownish black and wiry. The scales are dark brown. The fracture of the stipes and rhizomes is weak, brittle and even. The outline of the stipes is oval, that of the rhizome irregular. Cross-sections have up to 12 yellowish strands of conducting tissue arranged in a circle near the epidermis. The odor is indistinct. The taste is sweet, astringent and acrid.

**Constituents:** Filicic acid, volatile oil, bitter principles, starch, wax, resin, etc.

**Dose:** 4 Gm. (1 drachm).

#### **Preparations:**

Oleoresina Aspidii; Dose, 2 Gm. (30 grains).

## **ASPIDIUM—EUROPEAN**

**1.** Outer part of rhizome showing stipe scars. **2.** Longitudinal section of the rhizome showing the conducting strands. **3.** Curved and furrowed stipe base. **4.** Cross-section of rhizome.

## **ASPIDIUM (Aspid.) U. S. P.**

### **(2) European Aspidium**

**English name:** Aspidium.

**Synonyms:** European Male Fern.

**Botanical origin:** *Dryopteris Filix-mas* (Linné)  
Schott. (Fam. *Polypodiaceæ*.)

**Part used:** Rhizome and stipes.

**Impurities:** None given.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe, Asia and Northern Africa.

#### **Description:**

European male fern occurs as the partially peeled stipes and rhizomes and, rarely, as the entire rhizome. The stipes measure up to 6 cm. in length and to 9 cm. in length in diameter. The rhizome measures up to 15 cm. in length and to 3.5 mm. in diameter. The rhizome is simple and has numerous curved, persistent stem bases, and numerous roots and scales. The stem bases are prominent and have a great number of rusty brown scales. The outer part is black and decayed. The texture of the peeled stipes is fleshy; that of the rhizome, fleshy and fibrous. The color of the unpeeled stipes is brownish black, that of the peeled stipes brownish yellow. The color of the rhizomes varies from brownish yellow to brownish black. The surface of the stipes is longitudinally furrowed and has patches of brownish black periderm. The outer surface of the rhizomes has numerous broken stipe bases surrounded by semicircular brown colored depressions. The cut surface of the rhizomes has long-branching yellowish strands of conducting tissue. The fracture of the stipes and rhizomes is very weak, brittle, and even. The outline of the sections is irregular. The sections show a reddish brown outer region, a central region with up to 12 yellow conducting strands arranged in a circle, and an inner reddish-brown portion, which is distinctly porous when magnified. The odor is not characteristic. The taste is sweet, astringent and acrid.

**Constituents:** Filicic acid, volatile oil, bitter principles, starch, wax, resin, etc.

**Dose:** 4 Gm. (1 drachm).

#### **Preparations:**

Oleoresina Aspidii; Dose, 2 Gm. (30 grains).

## **TRILLIUM**

1, Large rhizome with numerous stem scars. 2, Small rhizome with roots. 3, Small horizontal rhizome. 4, Cross-section showing the thick cortex with cavities caused by decaying roots. 5, Stem scar.

## **TRILLIUM (Trill.) N. F.**

**English name:** Trillium.

**Synonyms:** Beth Root, Wake-Robin.

**Botanical origin:** *Trillium erectum* Linné and closely allied species of *Trillium*. (Fam. *Liliaceæ*.)

**Part used:** Dried rhizome.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Eastern and Central North America.

### **Description:**

*Trillium* occurs as a mixture of entire and cut sections of the rhizome and roots. The rhizomes measure up to 6 cm. in width. The young rhizomes are horizontal; the older rhizomes are oblique or horizontal; both are simple. They have a maximum length of 6 cm. and a maximum diameter of 3 cm. The older rhizomes have large, depressed stem scars. The texture is oily and starchy. The color varies from light yellow to dark reddish brown. The surface has numerous light yellow transversely wrinkled roots. The rhizome has slightly annulate leaf scars and numerous large depressed, elongated stem scars. The rhizome is usually terminated by an undeveloped stem bud and by numerous scales. The fracture is brittle and even. The cortex is thick and has numerous root scars. The endodermis is distinct and dark greenish brown. There are no distinctive markings within the endodermis. The color of the surface is greenish yellow. The odor is slight, like rancid oil, not characteristic. The taste is sweet, bitter or acrid.

**Constituents:** Saponin (trillin), resin, fixed oil, starch, tannin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Trillii; Dose, 2 mils (30 min.).

Bags of different shapes and sizes. At right, a bag of parsley root on top of fennel seed. At left, canary seed in striped bag, licorice cuttings in tall bag (rear).

## CHAPTER III

### RHIZOMES AND ROOTS

**I**N the study of rhizomes and roots the following must be considered: Occurrence, size, type, nature, stem and leaf scars and bases, texture, color, surface, tenacity, fracture, outline, cortex, cambium or endodermis, wood or central cylinder, pith, odor and taste.

**1. Occurrence.** Roots and rhizomes occur in the entire condition, as in helonias; or broken, as in mandrake; or cut, as in sumbul.

**2. Size.** The length of rhizomes varies from 15 mm., as in geranium, to 8.5 dm., as in gentian. The diameter varies from 2 mm., as in Virginia serpentaria, up to 12.2 cm., as in sumbul. The roots of lady-slipper, unicorn root and helonias are usually less than 1 mm. in diameter.

**3. Type.** The rhizomes of gentian, taraxacum, veratrum, etc., are vertical; those of mandrake, asarum and many others are horizontal; helonias, aralia and pimpinella are oblique. The *type* is always given in the description.

**4. Nature.** The root and rhizome may be simple or branched. Helonias is a simple rhizome; spigelia is a branched rhizome.

**5. Stem and Leaf Scars and Bases.** The stem scars of pink root are very small and contiguous; in mandrake and blue cohosh they are larger; in spikenard root they are very large. **Stem bases.** Short stem bases occur in leptandra; long stem bases occur in black cohosh, hydrastis, and blue cohosh. In dandelion and in senega the stem bases form a multiple crown.

**Leaf Bases and Leaves.** Leaf bases are diagnostic in veratrum, gentian, European angelica, dandelion,

**convallaria, helonias, and young rhizomes of unicorn root.** Leaves occur in both Virginia and Texas snake-root.

**6. Texture.** The texture of berberis, gelsemium, hydrangea, Russian and Spanish licorice roots, and echinacea is *fibrous* and *woody*; gentian is *non-fibrous*; inula is *resinous*, etc.

**7. Color.** Shades of gray, yellow, brown, red, are common in roots and rhizomes. Each drug has a normal color variation, which is a criterion of quality.

**8. Surface.** The surface of the rhizome portion of the vertical roots and rhizomes is annulate, as in American angelica. Prominent rings also occur on the black cohosh and on mandrake and helonias. It will be seen by referring to the plates that the rings may be contiguous, as in helonias, or separated by considerable space, as in black cohosh.

**9. Tenacity.** The tenacity or resistance to breaking varies in the different roots and rhizomes. According to the resistance which they offer, they are divided into classes as follows: Very weak brittle, weak brittle, brittle, tough, strong tough, and very strong tough roots and rhizomes. Very weak brittle: Texas and Virginia snakeroot, pink root, asarum, hydrastis, valerian, cypripedium, the angelicas, and senega. Weak brittle: Mandrake, parsley, pimpinella, and the male ferns. Brittle: Apocynum, dandelion, and gentian; dandelion and gentian, if moist, are pliable. Tough: Stillingia. Strong tough: Marshmallow, the licorice roots, leptandra, echinacea and valerian rhizome. Very strong tough: Wild yam, sumbul, phytolacca, inula and kava.

The following cannot be broken by the ordinary means: Rhubarb, berberis, gelsemium, hydrangea, convallaria, spikenard, triticum and the roots of caulophyllum, aletris and helonias.

**10. Fracture.** The fracture of apocynum is *even*; of leptandra *uneven*; of hydrangea *hackly*.

**11. Outline.** The outline of the roots and rhizomes is usually irregularly cylindrical.

12. **Cortex.** The cortex is thin, as in berberis; thicker, as in apocynum; or several times thicker than the wood (exception), as in dandelion. The color of the cortex is fairly uniform and diagnostic for each drug. The markings of the cortex are indistinct in some drugs, distinct in others. The cortex of American angelica and Spanish licorice is finely radiate; dandelion has concentric latex zones; German angelica has large oleoresin cavities.

13. **Cambium.** The cambium zone is usually distinct in most drugs.

14. **Wood.** The wood of berberis is concentric and radiate; of gelsemium, echinacea and kava, radiate; apocynum has large pores; German angelica is radiate near the cambium; mandrake has an interrupted circle of yellow conducting tissue; rhubarb is mottled.

15. **Pith.** The pith is prominent in a number of drugs. In berberis it is dark brown and small; in angelica it is large and frequently layered; in triticum the pith is hollow.

16. **Odor.** Many of the drugs have diagnostic odors, others are odorless. It should be remembered that odor is a criterion of quality.

17. **Taste.** The taste of the different drugs varies considerably. A few of the drugs have simple tastes (one). Russian and Spanish licorice and triticum are sweet; berberis, gelsemium, hydrastis and helonias are bitter; asarum is pungent. In the remaining roots and rhizomes two or more tastes are experienced as indicated under the description of each drug.

## **BERBERIS**

1, Large root with a split branch. 2, Longitudinal section showing small pith and patches of medullary rays. 3, Concentric rings of wood. 4, Radiating medullary rays. 5, Thin cortex.

## **BERBERIS (Berber.) N. F.**

**English name:** Berberis.

**Synonyms:** Oregon Grape Root, Trailing Mahonia.

**Botanical origin:** Species of *Odostemon* Rafinesque of the genus *Berberis* Linné. (Fam. *Berberidaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of the over-ground parts of the plant or other foreign matter. Berberis without the bark should be rejected.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Mountainous regions of North and South America.

### **Description:**

*Berberis* occurs as broken and as long transversely cut pieces of the rhizome and roots. Their length is variable and they measure up to 5 cm. in diameter. The sections of the roots are simple or branched. The *texture* is fibrous. The *color* varies from light yellow to dark yellowish brown. The *surface* is rough. This roughness is caused by small, irregular fissures of the periderm. The *fracture* is very strong, tough, and hackly. The *outline* of the cross-sections is nearly cylindrical. The *cortex* is thin and brownish green. The *wood* is concentric and is divided into small zones by the numerous radial medullary rays. In longitudinal sections of the root the medullary rays form broad, dark-colored bands. The *pith* is central or eccentric and is very small and greenish brown. The *odor* is not characteristic. The *taste* is bitter.

**Constituents:** Gum, fat, resin, tannin, alkaloids (berberine, oxycanthine, etc.), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Berberidis; Dose, 2 mils (30 min.).

## **GELSEMIUM**

**1, A twisted, split (at 1) and striated root. 2, Small dashes beginning at root scar. 3, Small wiry roots. 4, Thin cortex. 5, Thick, finely radiate wood.**

## GELSEMIUM (Gelsem.) U. S. P.

**English name:** Gelsemium.

**Synonyms:** Yellow Jasmine Root, Evening Trumpet Flower.

**Botanical origin:** *Gelsemium sempervirens* (Linné)  
Aiton filius. (Fam. *Loganiaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Eastern United States from Virginia to Florida and west to Texas; Mexico and Central America.

### Description:

*Gelsemium* occurs as a mixture of long transverse or oblique sections of the rhizome and roots. These sections measure up to 30 cm. in length and up to 35 mm. in diameter. The sections are frequently spirally twisted and usually simple. The texture is fibrous. The color varies from light yellowish brown to purple. The surface of the rhizome is longitudinally striated and transversely fissured, or occasionally split near the cut ends. The surface of the roots, which are small and wiry, is nearly smooth. The fracture is very strong, tough and hackly. The outline of cross-sections is nearly cylindrical or oval. The cortex is thin and purplish brown. The wood is indistinctly concentric and porous when magnified, and it is divided into narrow zones by radial medullary rays. The pith is very small and brown. The odor is not characteristic. The taste is bitter.

**Constituents:** Volatile oil, resin, acid, alkaloids (gelsemine, gelseminine), etc.

**Dose:** 0.03 Gm. ( $\frac{1}{2}$  grain).

### Preparations:

Extractum Gelsemii; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Fluidextractum Gelsemii; Dose, 0.03 mil ( $\frac{1}{2}$  min.).

Tinctura Gelsemii; Dose, 0.25 mil (4 min.).

## **HYDRANGEA**

1, Woody knotted crown. 2, Cut surface of wood. 3, Fine roots.

## **HYDRANGEA (Hydrang.) N. F.**

**English name:** Hydrangea.

**Synonyms:** Seven-barks, Wild Hydrangea.

**Botanical origin:** *Hydrangea arborescens* Linné.  
(Fam. *Saxifragaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Southeastern United States, from New York  
to Florida and west to Louisiana.

### **Description:**

*Hydrangea* occurs as a mixture of the entire rhizome and roots and as broken pieces. The crown measures up to 6 cm. in diameter; the roots to 3 dm. in length and to 3 cm. in diameter. The crown is usually multiple, and the stem bases are woody, hollow and pinkish. The stem scars are circular and depressed. The crown is compound; the stem bases have a thin, easily separated cortex. The wood usually splits longitudinally and has a white pith. The texture is fibrous. The color varies from light yellow to pinkish or reddish brown. The surface of the crown is gnarled and rough. The tortuous roots are longitudinally striated and have root scars or broken fibrous roots. The fracture is very strong, tough, and hackly. The outline of the cross-sections is nearly cylindrical. The cortex is thin and pinkish brown. The wood is fibrous, finely radiate and nearly white. The odor is not distinct. The taste is slightly sweet, bitter and acrid.

**Constituents:** Fat, resin, starch, fixed and volatile oil, glucoside (hydrangin), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Hydrangeæ; Dose, 2 mils (30 min.).

## **GLYCYRRHIZA—RUSSIAN**

1, Unpeeled root with gray and reddish-brown patches of cork. 2, Peeled root with small fissures. 3, Small peeled root. 4, Wood. 5, Thick cortex.

## **GLYCYRRHIZA (Glycyrrh.) U. S. P.**

### **(1) Russian Glycyrrhiza**

**English name:** Glycyrrhiza.

**Synonyms:** Licorice, Liquorice Root, Russian Licorice.

**Botanical origin:** *Glycyrrhiza glabra glandulifera*  
Regel et Herder. (Fam. Leguminosæ.)

**Part used:** Rhizome and roots.

**Impurities:** None given in Pharmacopœia.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Russia, Hungary.

#### **Description:**

Russian glycyrrhiza occurs as the entire and broken peeled or unpeeled roots, or cut pieces. The roots measure up to 6 dm. in length and to 6 cm. in diameter. Stem bases are never present. The roots are usually simple and tapering. The texture is soft fibrous. The color of the peeled roots is greenish yellow; that of the unpeeled roots, brownish red. The surface of the peeled roots is smooth or rough and has transverse clefts; the surface of the unpeeled roots is rough and wrinkled, and it has many elevated lenticels. The fracture is tough and uneven. The outline of the cross-section is nearly cylindrical. The cortex is thick, radially cleft and radiate. The cambium zone is distinct. The wood is yellowish green and radiate. The pith is small and inconspicuous. The odor is slightly aromatic. The taste is sweet.

**Constituents:** Glycyrrhizin, volatile oil, asparagin, resin, sugar, yellow coloring matter, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Elixir Glycyrrhizæ (from Fluidextract).

Elixir Glycyrrhizæ Aquosum N. F.; Dose, 8 mils (2 fl. drs.).

Elixir Glycyrrhizæ Aromaticum N. F.; Dose, 8 mils (2 fl. drs.).

Fluidglyceratum Glycyrrhizæ N. F.; Dose, 2 mils (30 min.).

Extractum Glycyrrhizæ.

Extractum Glycyrrhizæ Purum.

Fluidextractum Glycyrrhizæ; Dose, 2 mils (30 min.).

Mistura Glycyrrhizæ Composita (from extract); Dose, 10 mils (2  $\frac{1}{2}$  fl. drs.).

Pulvis Glycyrrhizæ Compositus; Dose, 4 Gm. (1 drachm).

Syrupus Glycyrrhizæ N. F.; Dose, 8 mils (2 fl. drs.).

## **GLYCYRRHIZA—SPANISH**

1. Rhizome showing wrinkled surface. 2. Small bud. 3.  
Longitudinal section showing central pith and cortex. 4.  
Cross-section of rhizome.

# **GLYCYRRHIZA (Glycyrrh.) U. S. P.**

## **(2) Spanish Glycyrrhiza**

**English name:** Glycyrrhiza.

**Synonyms:** Licorice, Liquorice Root, Spanish Licorice.

**Botanical origin:** *Glycyrrhiza glabra typica* Regel et Herder. (Fam. *Leguminosæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Central and Western Asia, Southern Europe.

### **Description:**

Spanish Glycyrrhiza occurs as the entire rhizome and root, or as sawed sections arranged in bundles and held together with wire bands, or it occurs as small cut pieces called *cut licorice*, or as the cut stems, rhizomes, and roots separated in making the bundles and known as *licorice cuttings*. This contains much worthless stem bases. The entire drug measures up to 1 m. in length and to 2 cm. in diameter. The rhizome is simple and the crown usually has several stem bases, which vary in color from grayish brown to nearly black, very woody, and with brown piths. The texture is fibrous. The color is grayish or purplish brown with light yellow longitudinal patches of cork. The surface of the rhizome is rough, longitudinally wrinkled, and has alternately arranged buds. The roots are small, inconspicuous, and occur near the bud. The fracture is tough and uneven. The outline of the cross-section is nearly cylindrical. The cortex is thick and radiate. The cambium zone is distinct. The wood is yellowish green, radiate and porous. The pith is bright yellowish green. The odor is slightly aromatic. The taste is sweet.

**Constituents:** Glycyrrhizin, volatile oil, asparagin, resin, sugar, yellow coloring matter, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Elixir Glycyrrhizæ (from fluidextract).

Elixir Glycyrrhizæ Aquosum N. F.; Dose, 8 mils (2 fl. drs.).

Elixir Glycyrrhizæ Aromaticum N. F.; Dose, 8 mils (2 fl. drs.).

Fluidglyceratum Glycyrrhizæ N. F.; Dose, 2 mils (30 min.).

Extractum Glycyrrhizæ.

Extractum Glycyrrhizæ Purum.

Fluidextractum Glycyrrhizæ; Dose, 2 mils (30 min.).

Mistura Glycyrrhizæ Composita (from extract); Dose, 10 mils (2  $\frac{1}{2}$  fl. drs.).

Pulvis Glycyrrhizæ Compositus; Dose, 4 Gm. (1 drachm).

Syrupus Glycyrrhizæ N. F.; Dose, 8 mils (2 fl. drs.).

## **ECHINACEA**

**1.** Stem of plant. **2.** Typical rhizome and root. **3.** Longitudinal section. **4.** Transverse section.

## **ECHINACEA (Echin.) N. F.**

**English name:** Echinacea.

**Synonyms:** Pale Purple Cone Flower.

**Botanical origin:** *Brauneria pallida* (Nuttall) Britton  
(*Echinacea angustifolia* De Candolle). (Fam.  
*Compositæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Central and Southern United States.

### **Description:**

Echinacea occurs as a mixture of entire and broken pieces of the rhizome and roots. These pieces measure up to 25 cm. in length and to 3.8 cm. in diameter. Echinacea is a vertical rhizome and root, and is usually crooked and twisted. The crown is simple or multiple. The stem bases are gray or purplish brown, annulate near the crown, striated above, and have a white pith. The texture is fibrous. The color varies from gray and yellow to reddish brown. The surface of the crown is annulate; that of the root longitudinally striated and wrinkled. The fracture is tough when dry, but it is slightly pliable when moist. The outline of the sections is cylindrical. The cortex is thick and grayish or brownish black. The wood has alternate yellow wedge-shaped masses of conducting tissue and parenchymatic tissue with black cell contents. The pith is small and circular. The odor is not characteristic. The taste is sweet and tingling.

**Constituents:** Acrid resin, possibly also an alkaloid, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Echinaceæ; Dose, 1 mil (15 min.).



## APOCYNUM

1, Portion of stem. 2, Wrinkled and fissured root. 3, Transverse section showing the porous wood. 4, Small transverse section.

## **APOCYNUM (Apocyn.) N. F.**

**English name:** Apocynum.

**Synonyms:** Canadian Hemp.

**Botanical origin:** *Apocynum cannabinum* Linné.  
(Fam. *Apocynaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** United States and Canada.

### **Description:**

*Apocynum* occurs as broken pieces of the rhizome with and without roots. The *rhizome* measures up to 5 cm. in length and to 2 cm. in diameter. The *roots* are small and may measure up to 5 cm. in length. The *rhizome* is horizontal and simple or branched. The *stem bases* are purplish brown. The *bark* is thin and frequently removed. The *wood* is yellow and the center is usually hollow. The *texture* is starchy. The *color* is gray or purplish brown. The *surface* of the *rhizomes* is longitudinally furrowed and transversely fissured. The *fracture* is weak and even. The *outline* is irregularly cylindrical. The *cortex*, which is thick, has dark latex cavities. The *cambium zone* is distinct. The *wood* is yellowish and coarsely porous. The *odor* is not distinct. The *taste* is sweet, bitter and acrid.

**Constituents:** Glucosides (apocynin and apocynein), resin, starch, gum, tannin, etc.

**Dose:** 0.75 Gm. (12 grains).

### **Preparations:**

Fluidextractum Apocyni; Dose, 0.75 mil (12 min.).

## **GENTIANA**

1, Root with numerous leaf bases. 2, Deep wrinkles. 3, Annulate rhizome portion. 4, Curved and twisted root. 5, Cross-section of root showing dark cambium zone.

## GENTIANA (Gentian.) U. S. P.

**English name:** Gentian.

**Synonyms:** Yellow Gentian Root.

**Botanical origin:** *Gentiana lutea* Linné. (Fam. *Gentianaceæ*.)

**Part used:** Rhizome and root.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Central and Southern Europe.

### Description:

Gentian root occurs as broken pieces and rarely as entire roots. These roots measure up to 8.5 dm. in length, but are usually shorter, and to 37 mm. in diameter. The rhizome and root are vertical and simple or branched. The crown terminates in a circular stem scar or in leafy scales surrounding the undeveloped stem. The texture is non-starchy and slightly waxy. The color is light or dark yellowish brown. The surface of the rhizome is annulate and rough with fibers from leaf bases; that of the root, deeply wrinkled longitudinally. The fracture is brittle when the root is dry, but pliable when it is moist. The outline is very irregular on account of wrinkles. The cortex is of variable thickness and yellow-brown. The cambium zone is dark brown. The wood is distinctly radiate near the cambium, but less so near the large brownish yellow pith. The odor is aromatic. The taste is sweet or strongly bitter.

**Constituents:** Fat, resin, pectin, sugar, glucosides (gentiopicrin, gentisin), yellow coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Elixir Gentianæ N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Gentianæ et Ferri N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Gentianæ et Ferri Phosphatis N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Gentianæ Glycerinatum N. F.; Dose, 8 mils (2 fl. drs.).

Extractum Gentianæ; Dose, 0.25 Gm. (4 grains).

Fluidextractum Gentianæ; Dose, 1 mil (15 min.).

Tinctura Amara N. F.; Dose, 2 mils (30 min.).

Tinctura Gentianæ Composita; Dose, 4 mils (1 fl. dr.).

## **TARAXACUM**

1, Multiple crown and root below. 2, Surface view of crown with depressed scars. 3, Scales occurring in the crown. 4, Yellow porous wood. 5, Cortex with concentric zones of latex.

## TARAXACUM (Tarax.) U. S. P.

**English name:** Taraxacum.

**Synonyms:** Dandelion, Foreign Dandelion, Lion's Tooth.

**Botanical origin:** *Taraxacum officinale* Weber. (Fam. Compositæ.)

**Part used:** Rhizome and root.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe; naturalized in the United States, where it is a common weed.

### Description:

Dandelion occurs as a mixture of entire and broken fragments of the rhizome and roots. These fragments measure up to 16 cm. in length and to 3 cm. in diameter at the crown. Dandelion is a vertical rhizome and root, and it may be simple or branched. Leaf bases or leaf scars terminate the branches of the crown. The texture is waxy. The color varies from light gray to dark reddish brown. The surface of the crown is annulate with leaf scales; that of the roots is irregularly and longitudinally wrinkled. The crown is hollow or has a mass of brown hairs from scales and undeveloped leaves. The fracture is brittle when dry but pliable when moist. The outline is cylindrical. The cortex makes up the greater part of the root and has dark, concentric circles of laciferous ducts. The cambium zone is dark brown and distinct. The wood is yellow, and in the older roots and rhizome a pith is present. The odor is not distinct. The taste is sweet and bitter.

**Constituents:** Resin, bitter principles, inulin, levulin, pectin, etc.

**Dose:** 10 Gm. ( $2\frac{1}{2}$  drachms).

### Preparations:

Elixir Taraxaci Compositum N. F.; Dose, 8 mils (2 fl. drs.).

Extractum Taraxaci; Dose, 1 Gm. (15 grains).

Fluidextractum Taraxaci; Dose, 10 mils (2  $\frac{1}{2}$  fl. drs.).

## **INULA**

**1.** Longitudinally furrowed surface. **2.** Stem scar. **3.** Cut surface of the rhizome. **4.** Resinous cut surface.

## INULA N. F.

**English name:** Inula.

**Synonyms:** Elecampane, Horsehead.

**Botanical origin:** *Inula Helenium* Linné. (Fam. *Compositæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of its stem bases or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Asia, Central Europe; naturalized in North-eastern North America, south to North Carolina, west to Missouri.

### Description:

*Inula* occurs as a mixture of entire rhizomes and roots, as broken and as cut slices. The rhizomes measure up to 6.5 cm. in diameter near the crown. The roots measure up to 18 cm. in length. The roots are simple or branched. The crown has one or more stem scars, or short stem bases, or the fibrous remains of stems, or a central terminal bud with grayish brown scales. The texture is resinous and fibrous. The color varies from a light yellow to brownish black. The surface of the crown is slightly annulate and longitudinally furrowed, and has several prominent buds. The surface of the roots is longitudinally furrowed and wrinkled, and has root scars. The fracture is very strong, tough and even when dry, long and pliable when moist. The outline of the cross-section is nearly cylindrical. The cortex is of unequal diameter, brownish white, and finely radiate. The cambium zone is distinct. The wood is finely radiate and has yellowish green resin masses. The pith is small and inconspicuous. The odor is aromatic. The taste is sweet, pungent, or acrid.

**Constituents:** Volatile oil, resin, mucilage, helenin, inulin, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Enters into Pilulæ Antiperiodicæ N. F., and Tinctura Antiperiodica N. F.

## **ANGELICÆ RADIX—AMERICAN**

1, Annulate rhizome with several branches. 2, Large white pith. 3, Small root. 4, Cross-section showing cortex with resin cells and slightly radiate wood, and pith. 5, Longitudinal section.

# **ANGELICÆ RADIX (Angel. Rad.) N. F.**

## **(1) American Angelica Root**

**English name:** Angelica Root.

**Synonyms:** American Angelica, Great Angelica, Purple Angelica.

**Botanical origin:** *Angelica atropurpurea* Linné and other species of *Angelica*. (Fam. *Umbelliferae*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of stem bases and leaves or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Eastern United States, south to Delaware, west to Minnesota.

### **Description:**

American Angelica Root occurs as a mixture of the longitudinally cut rhizome with entire and cut roots. The rhizome and roots measure up to 30 cm. in length, the crown to 4 cm. in diameter, and the roots to 15 mm. in diameter. The rhizome is usually simple, but the roots are branched. The crown tapers upward and is usually free of scales and stem bases. The texture is non-fibrous. The color varies from grayish yellow to grayish brown. The surface of the rhizome is prominently annulate; that of the roots is longitudinally wrinkled, and has elevated points of origin of rootlets or root scars. The fracture is very weak, brittle, even when dry, but soft and pliable when moist. The outline of cross-section is nearly cylindrical. The cortex is thick, radiate, and has scattered yellowish oleoresin cavities. The cambium zone is distinct. The wood is radiate and the pith is large and frequently separated in the rhizome into layers by longitudinal clefts. The odor is aromatic. The taste is sweet, pungent and tingling.

**Constituents:** Volatile oil, acid resin (angelicin), angelic acid, starch, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

**Fluidextractum Angelicæ Radicis;** Dose, 2 mils (30 min.).

## **ANGELICÆ RADIX—EUROPEAN**

1, Numerous leaf bases attached to the crown. 2, Annulate surface. 3, Small pliable root. 4, Cortex with resin cavities. 5, Pith. 6, Radiate yellow wood.

## **ANGELICÆ RADIX (Angel. Rad.) N. F.**

### **(2) European Angelica Root**

**English name:** Angelica Root.

**Synonyms:** European Angelica, Garden Angelica, Arkangel.

**Botanical origin:** *Angelica Archangelica* Linné and other species of *Angelica*. (Fam. Umbelliferæ.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of stem bases and leaves or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Northern Europe; cultivated in France, Germany and Belgium.

#### **Description:**

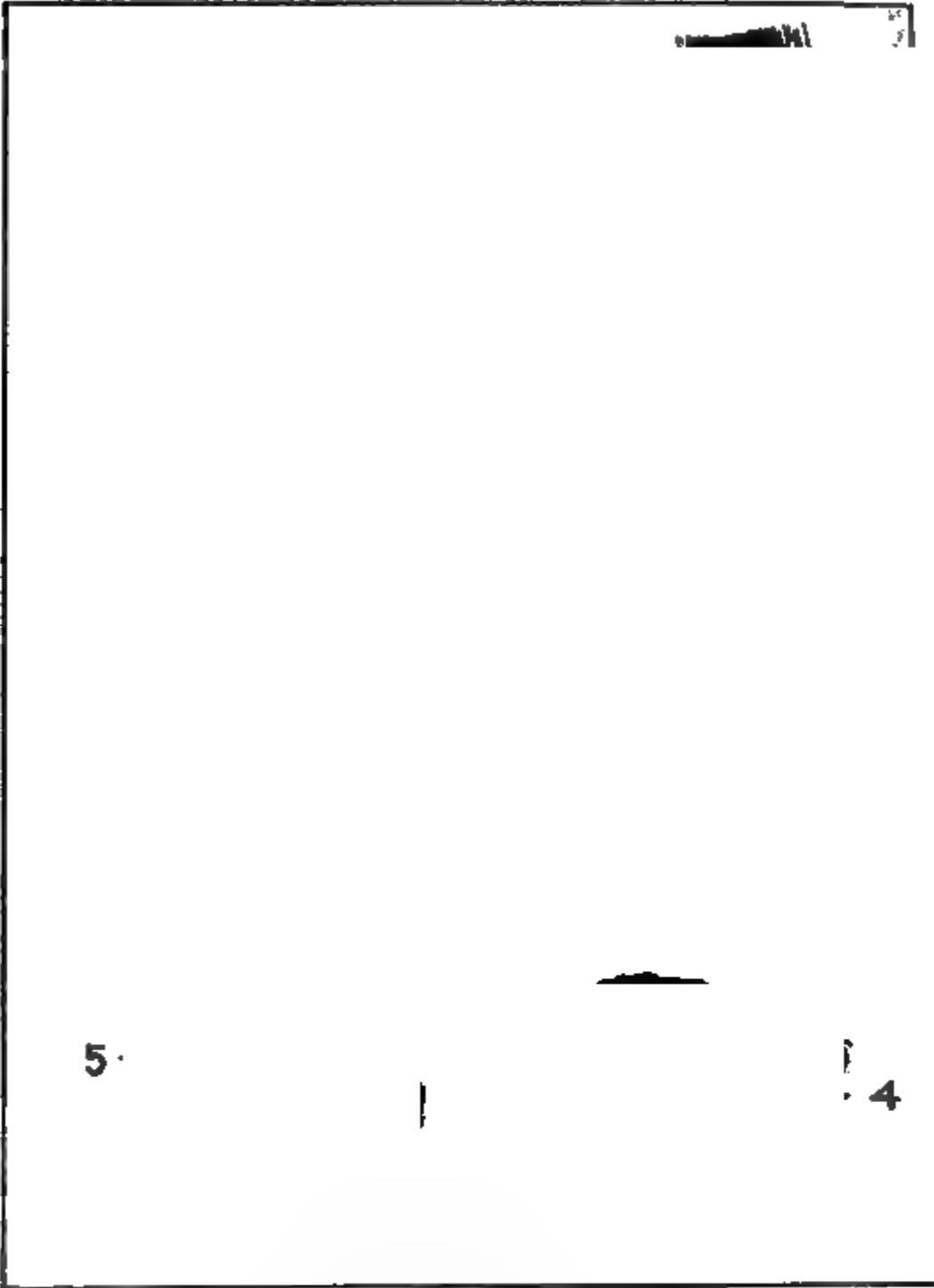
German Angelica Root occurs as the entire rhizome with its numerous roots folded, twisted and braided. The drug measures up to 15 cm. in length and to 4.5 cm. in diameter at the crown. The rhizome and the roots are simple or branched. The crown has numerous concentric purplish or brown prominently veined scales. The texture is fleshy. The color varies from a light grayish brown to a purplish brown. The surface of the rhizome portion is annulate. The surface of the roots is longitudinally furrowed and with small transversely elongated ridges which are the point of origin of the rootlets. The fracture is short when dry, but long and pliable when moist. The outline of cross-sections of the rhizome and roots is nearly cylindrical. The cortex is thick, radiate, and with numerous isolated, yellowish brown oleoresin cavities. The cambium zone is distinct. The wood is distinctly radiate. The pith is large and frequently longitudinally cleft in the rhizome. The odor is aromatic. The taste is aromatic and pungent.

**Constituents:** Volatile oil, acrid resin (angelicin), angelic acid, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Angelicæ Radicis; Dose, 2 mils (30 min.).



5

4

### VERATRUM VIRIDE

1, Concentric leaf bases attached to the crown. 2, Longitudinal section of the rhizome. 3, Curved and twisted soft-tissued roots. 4, Surface view of the crown. 5, Cross-section of the rhizome showing the cortex. 6, Central cylinder.

## **VERATRUM VIRIDE (Verat. Vir.) U. S. P.**

**English name:** Veratrum Viride.

**Synonyms:** Green Hellebore, American White Hellebore.

**Botanical origin:** *Veratrum viride* Aiton. (Fam. *Liliaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of stems and other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Eastern North America, south to Georgia and Tennessee.

### **Description:**

Veratrum Viride occurs as a mixture of the entire rhizome and the roots with longitudinal sections of the rhizomes. The *rhizome* is vertical, short or elongated; both roots and rhizomes are simple. The rhizomes have a maximum length of 10 cm. and width of 4 cm. The upper part of the rhizome has numerous concentric leaf scales. The *texture* is starchy and resinous. The *color* of the scales is yellowish white, of the roots gray or grayish yellow, of the rhizome brownish black. The *surface* of the scales is striated, that of the rhizome rough, that of the roots wrinkled. The *fracture* of the rhizome is strong and tough, that of the roots very weak and brittle. The *outline* of entire rhizomes and of roots is cylindrical. The *cortex* is thick, and it has scattered masses of yellowish conducting cells. The *endodermis* is very distinct and yellowish brown. The *central cylinder* has numerous irregular groups of yellowish conducting tissue. The *odor* is not distinct. The *taste* is sweet, bitter or acrid.

**Constituents:** Alkaloids (veratrine, rubiervine), fat, resin, gum, starch, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Fluidextractum Veratri Viridis; Dose, 0.1 mil ( $1\frac{1}{2}$  min.).  
Tinctura Veratri Viridis; Dose, 0.5 mil (8 min.).

## **VALERIANA**

1. Stem scar of valerian and folded roots. 2, Double band  
of grass. 3. Mass of roots. 4. Split rhizome and the large  
roots of Belgian valerian

## **VALERIANA (Valer.) U. S. P.**

**English name:** Valerian.

**Synonyms:** Valerian Root, Garden Valerian.

**Botanical origin:** *Valeriana officinalis* Linné. (Fam. *Valerianaceæ*.)

**Part used:** Rhizome and root.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 20 per cent.

**Habitat:** Europe and Asia; cultivated in Germany, Belgium and England; naturalized in New York and New Jersey.

### **Description:**

*Valeriana* occurs as a mixture of the entire rhizome and roots and of cut sections of the rhizome with roots. The rhizomes of German *Valeriana* are usually entire. The roots are folded and held together with a blade of dried grass passed twice around the roots and tied. The rhizomes measure up to 4 cm. in length, and to 2 cm. in diameter. The roots measure up to 18 cm. in length, and to 3 mm. in diameter. The rhizome is vertical, simple or branched, and has one or more stem bases and numerous leaf scales. The roots are branched or simple. The texture is non-fibrous and waxy. The color varies from a gray to yellowish brown. The surface of the rhizome is rough from root scars and is annulate. The roots are wrinkled longitudinally. The fracture of the roots is very weak and brittle. The outline of entire rhizomes and roots is cylindrical. The cortex is thick. The cambium zone is distinct. The wood has a yellow ring of conducting tissue. The pith is white or grayish white. The cortex of the root is thick and yellowish brown. The wood is small, central and cylindrical. The odor is strongly and persistently aromatic. The taste is sweet and pungent.

**Constituents:** Volatile oil, acids, tannin, sugar, mucilage, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

*Fluidextractum Valerianæ N. F.*; Dose, 2 mils (30 min.).

*Tinctura Valerianæ*; Dose, 4 mils (1 fl. dr.).

*Tinctura Valerianæ Ammoniata*; Dose, 2 mils (30 min.).

## **CAULOPHYLLUM**

1. Circular depressed stem scar of the rhizome. 2. Wiry branched roots.

## **CAULOPHYLLUM (Cauloph.) N. F.**

**English name:** Caulophyllum.

**Synonyms:** Blue Cohosh, Papoose Root, Squaw Root.

**Botanical origin:** *Caulophyllum thalictroides* (Linné)  
Michaux. (Fam. Berberidaceæ.)

America south to North  
a.

s of entire and broken pieces  
rhizomes measure up to 20 cm.  
diameter. The branched roots  
up to 3 mm. in diameter. The  
ularly branched, and they are  
ressed, contiguous stem scars.  
is grayish brown. The surface  
the stem scars. The roots are  
fracture is tough and backly,  
irly cylindrical. The cortex of  
fibrous and radiate. The pith  
nab. The odor is not charac-  
er and acrid.

ins, alkaloid (caulophyl-  
etc.

0.6 mil (8 min.).

## **LEPTANDRA**

1, Rhizome, stem bases and numerous woody tough roots.  
2, Purplish pith. 3, Wood. 4, Cortex. 5, Longitudinal  
section of the rhizome.

## **LEPTANDRA (Leptand.) N. F.**

**English name:** Leptandra.

**Synonyms:** Culver's Root, Culver's Physic.

**Botanical origin:** *Veronica virginica* Linné. (Fam. *Scrophulariaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Eastern Canada, and United States south to Alabama and west to Nebraska.

### **Description:**

Leptandra occurs as a mixture of entire and broken pieces of the rhizome and roots. The rhizomes measure up to 27 cm. in length and to 14 cm. in diameter. The roots measure up to 15 cm. in length and to 3 mm. in diameter. The rhizome is horizontal, simple, or branched, and has a large woody, hollow stem base, frequently 3 cm. in length, and undeveloped buds. The older portions of the rhizome have the shortest stem bases. The texture is fibrous. The color varies from grayish to purplish brown. The surface of the rhizome is annulate with slightly elevated leaf scars. The surface of the roots is wrinkled longitudinally. The fracture is tough and uneven. The outline of cross-sections is nearly cylindrical. The cortex of the rhizome is thin, resinous and dark brown. The wood of the rhizome is yellowish brown and forms a compact ring. The pith of the rhizome is purplish brown. The roots have a purplish brown cortex and a small gray central cylinder. The odor is not characteristic. The taste is bitter and acrid.

**Constituents:** Bitter principle (leptandrin), resin, saponin, tannin, gum, mannit, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Extractum Leptandræ; Dose, 0.25 Gm. (4 grains).  
Fluidextractum Leptandræ; Dose, 1 mil (15 min.).

## **CIMICIFUGA**

**1.** Portion of the stem. **2.** Annulate stem bases. **3.** Small root. **4.** Cross-section of a stem base showing interrupted wood bundles.

## **CIMICIFUGA (Cimicif.) U. S. P.**

**English name:** Cimicifuga.

**Synonyms:** Black Cohosh, Black Snakeroot, Macrotyls.

**Botanical origin:** *Cimicifuga racemosa* (Linné) Nuttall. (Fam. *Ranunculaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 2 per cent. of stems or foreign matter.

**Assay:** None given officially.

**Ash:** Not more than 10 per cent.

**Habitat:** Eastern North America south to Georgia, west to Missouri.

### **Description:**

*Cimicifuga* occurs as a mixture of entire, cut and broken pieces of the rhizome and roots. The rhizomes measure up to 15 cm. in length and to 30 mm. in diameter, the broken roots up to 10 cm. in length and to 3 mm. in diameter. The rhizome is horizontal, and has several large stem bases, which frequently measure 10 cm. in length, and several undeveloped buds. The texture is resinous and fibrous. The color varies from grayish brown to brownish black. The surface of the rhizome is annulate with elevated leaf scales; and the ends of the stem bases are frequently separated into fibrous strands. The fracture is very strong, tough and uneven. The outline of cross-sections is nearly cylindrical. The cortex is thin. The wood has a broad interrupted radiating structure. The pith is large and solid. The roots are cylindrical or obtusely angled. The cortex is thick and nearly black. The wood is radiate with two to six widely separated strands. The odor is not characteristic. The taste is bitter and acrid.

**Constituents:** Resin, cimicifugin, volatile oil, sugar, gum, starch, tannin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Extractum Cimicifugæ. Dose, 0.25 Gm. (4 grains).

Fluidextractum Cimicifugæ; Dose, 1 mil (15 min.).

Syrupus Cimicifugæ Compositus N. F.; Dose, 4 mils (1 fl. dr.).

Tinctura Cimicifugæ N. F.; Dose, 4 mils (1 fl. dr.).

## **PODOPHYLLUM**

1, Under surface of the rhizome showing stem scars and roots. 2, Depressed stem scar. 3, Root scar. 4, Annulate leaf scar. 5, Cross-section showing interrupted conducting strands. 6, Longitudinal section of the rhizome.

## **PODOPHYLLUM (Podoph.) U. S. P.**

**English name:** Podophyllum.

**Synonyms:** Mandrake, May Apple Rhizome.

**Botanical origin:** *Podophyllum peltatum* Linné.  
(Fam. *Berberidaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** Not less than 3 per cent. of resin.

**Ash:** Not more than 3 per cent.

**Habitat:** Eastern and Central North America.

### **Description:**

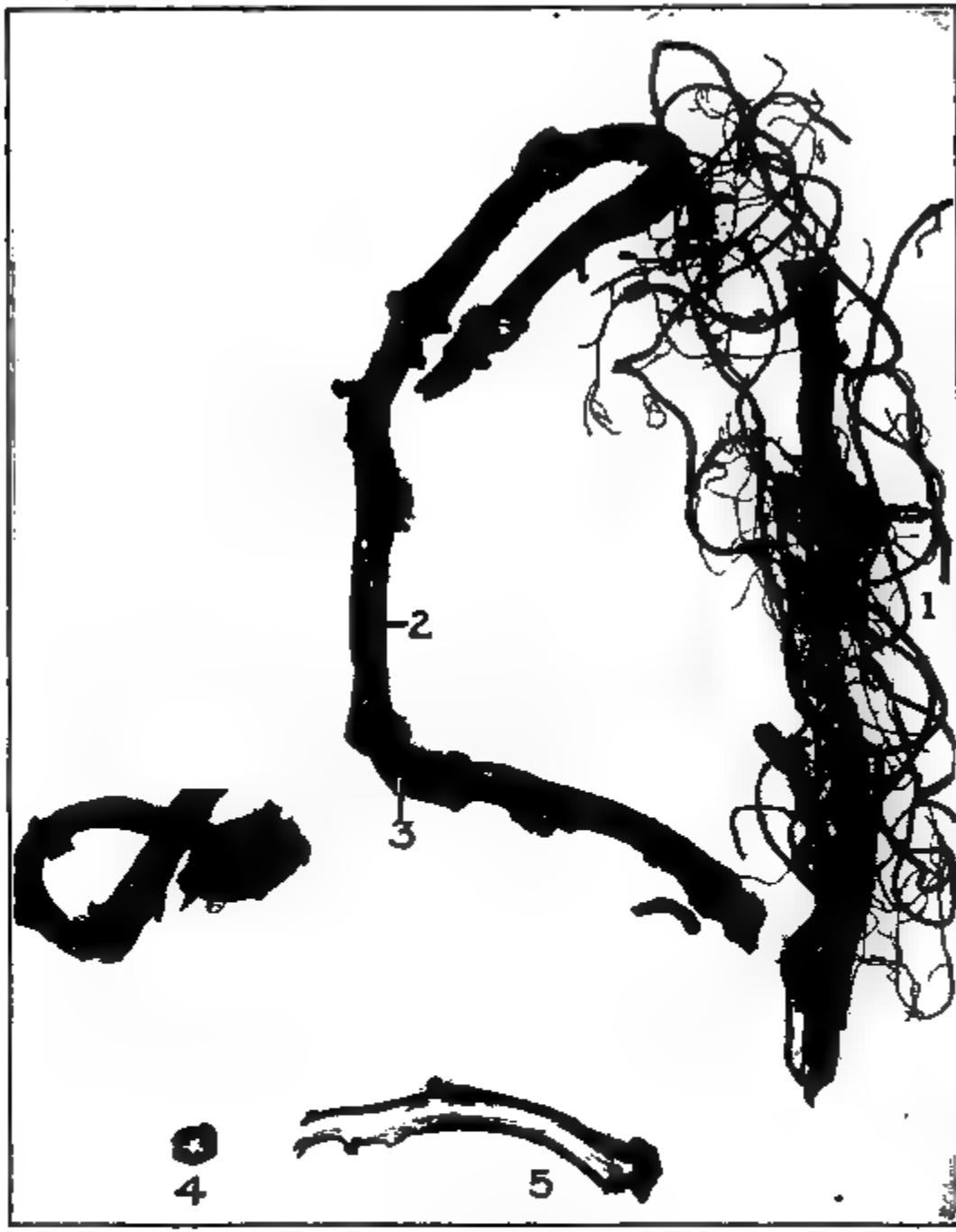
*Podophyllum* occurs as a mixture of entire and broken pieces of the rhizome and root. It measures up to 30 cm. in length and to 15 mm. in diameter at the node. It is a horizontal rhizome with enlarged nodes, each with a circular depressed stem scar and an occasional undeveloped bud and long internodes up to 17 cm. in length. The *texture* is starchy or resinous. The *color* varies from gray and yellow to reddish brown. The *upper surface* of the rhizome is striated longitudinally, annulate with light-colored, slightly elevated leaf-scale scars and with deep, circular, depressed stem scars. The *under surface* of the rhizome at the node has several white root scars or several attached roots. The roots are finely striated longitudinally and of a grayish or yellowish brown color. The *fracture* of the rhizome and root is weak, brittle and even. The *outline* of the cross-section of the rhizome is circular or oval, that of the root circular. The *cortex* of the rhizome is thin and grayish white. The *wood* has an interrupted circle of isolated yellow conducting strands and a large grayish white *pith*. Longitudinal sections of the rhizome show the conducting strands as parallel lines. The root has a white cortex and a solitary central yellow conducting strand. The *odor* is not distinct. The *taste* is sweet, bitter or acrid.

**Constituents:** Resin, glucosides, starch, gum, fixed oil, acid, etc.

**Dose:** Used only in the form of its preparations.

### **Preparations:**

Extractum Podophylli N. F.; Dose, 0.015 Gm. ( $\frac{1}{4}$  grain).  
Fluidextractum Podophylli; Dose, 0.5 mil (8 min.).  
Resina Podophylli; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).



## ASARUM

1. Rhizome with numerous roots and rootlets. 2. Winged edge of the rhizome. 3. Enlarged node. 4. Cross-section showing branching wood. 5. Longitudinal section.

## **ASARUM (Asar.) N. F.**

**English name:** Asarum.

**Synonyms:** Wild Ginger, Canada Snakeroot.

**Botanical origin:** *Asarum canadense* Linné. (Fam. *Aristolochiaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of other foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Eastern North America south to North Carolina.

### **Description:**

Asarum occurs as a mixture of the entire and broken pieces of the rhizome and roots. The rhizomes measure up to 20 cm. in length and to 6 mm. in diameter. The roots measure up to 10 cm. in length. The rhizome has enlarged nodes, is horizontal, simple or branched, and twisted or bent. The roots are branched. Petiole scars occur at the enlarged nodes. The texture is starchy or resinous. The color varies from light yellow to dark purplish brown. The surface is longitudinally striated and winged and occasionally annulate from leaf-scale scars. The fracture is very weak, brittle and even. The outline of the cross-section of the rhizome varies from nearly cylindrical to triangular or to quadrangular. The cortex is thin and dark yellowish brown. The wood has isolated, brown, conducting strands arranged in a circle. The pith is yellowish-white. The odor is aromatic. The taste is pungent.

**Constituents:** Volatile and fixed oil, starch, gum, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Syrupus Asari Compositus; Dose, 4 mils (1 fl. dr.).



### **CONVALLARIAE RADIX**

1, Rhizome with mass of curved, twisted roots. 2, Leafy scales of bud. 3, Node with radiate roots. 4, Internode with red spots.

# **CONVALLARIAE RADIX (Convallar. Rad.) N. F.**

**English name:** Convallaria Root.

**Synonyms:** Lily-of-the-Valley Root.

**Botanical origin:** *Convallaria majalis* Linné. (Fam. *Liliaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given.

**Assay:** None given officially.

**Ash:** Not more than 10 per cent.

**Habitat:** North America, Europe and Northern Asia; cultivated for its flower.

## **Description:**

Convallaria Root occurs as a mixture of entire and broken pieces of the rhizome and root. The rhizome measures up to 25 cm. in length and to 4 cm. in diameter; the internodes measure up to 4.5 cm. in length. The roots measure up to 15 cm. in length. The rhizome is horizontal, simple, or branched, and has enlarged nodes, a circle of roots, or root scars, and an occasional undeveloped branch or stem. Stem bases with leafy scales frequently terminate the rhizome. The texture is fibrous. The color varies from light yellow to dark brown, with purple patches. The surface of the rhizome is longitudinally striated. The nodes are enlarged and have prominent root scars or roots. The fracture is weak, tough, even and incomplete. The outline of the rhizome and roots is nearly cylindrical. The cortex is thin. The endodermis is distinct when magnified. The central cylinder has isolated conducting strands. The pith is frequently hollow. The odor is not distinct. The taste is sweet, bitter and acrid.

**Constituents:** Volatile oil, resin, glucosides (convallamarin, convallarin), etc.

**Dose:** 0.5 Gm. (8 grains).

## **Preparations:**

Fluidextractum Convallariæ Radicis; Dose, 0.5 mil (8 min.).

## **TRITICUM**

1, Node with circle of roots. 2, Mass of chopped rhizomes.  
3, Cross-section of the rhizome with hollow pith. 4, Fur-  
rowed internode.

## **TRITICUM (Tritic.) U. S. P.**

**English name:** Triticum.

**Synonyms:** Couch Grass, Dog Grass.

**Botanical origin:** *Agropyron repens* (Linné) Beauvois. (Fam. Gramineæ.)

**Part used:** Rhizome and roots.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Europe, Asia; naturalized and common in North America.

### **Description:**

Triticum occurs as a mixture of entire and broken pieces, or as cut pieces of the rhizome and roots. It measures up to 40 cm. in length and to 3 mm. in diameter. The branched roots measure up to 7 cm. in length. The rhizome is horizontal, slightly enlarged at the nodes, and has a circle of roots or root scars and an occasional undeveloped branch. The internodes measure up to 3.5 cm. The texture is fibrous. The color varies from yellow to yellowish brown. The surface of the internodes of the rhizome is longitudinally furrowed and smooth, the fracture is very tough, even and incomplete. The outline of cross-sections of the rhizome is irregular and circular and the central portion is hollow. The odor is not distinct. The taste is sweet.

**Constituents:** Bitter principle (triticin), levulose, acid malates, gum, etc.

**Dose:** 8 Gm. (2 drachms).

### **Preparations:**

Fluidextractum Tritici; Dose, 10 mils ( $2\frac{1}{2}$  fl. drs.).

## **CYPRIPEDIUM**

**1.** Rhizome with numerous crooked roots. **2.** Typical root.  
**3.** Stem scar.

## **CYPRIPEDIUM (Cypriped.) N. F.**

**English name:** Cypripedium.

**Synonyms:** Lady Slipper Root, Yellow Lady's Slipper Root.

**Botanical origin:** *Cypripedium hirsutum* Miller, *Cypripedium pubescens* Willdenow, or *Cypripedium parviflorum* Salisbury. (Fam. *Orchidaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of parts of the same plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Canada and United States, south to Georgia and west to Nebraska.

### **Description:**

*Cypripedium* occurs as a mixture of entire and broken pieces of the rhizome and roots. The rhizomes measure up to 11 cm. in length and to 7 mm. in diameter. The rhizome is horizontal and usually simple. The *upper surface* has several circular depressed stem scars which are not over 5 mm. apart. Attached to all sides of the rhizome are numerous curved and twisted roots. The *texture* is non-fibrous. The *color* of the rhizome varies from yellowish to brownish black; the roots are yellowish brown. The *surface* of the rhizome and roots is finely striated. The *fracture* of the rhizomes and roots is very weak, brittle and uneven. The *outline* of cross-sections of rhizomes and roots is cylindrical. The *cortex* of the rhizome is thin, that of the root thick. The *wood* of the rhizome and root is distinctly not separated into wood and pith. The *odor* is aromatic. The *taste* is bitter and acrid.

**Constituents:** Volatile oil, acids, resin, tannin, starch, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Cypripedii; Dose, 1 mil (15 min.).

## **SANGUINARIA**

- 1, Branched rhizome.
- 2, Rhizome with its small roots.
- 3, Stem scar.
- 4, Cross-section showing circular latex tubes.
- 5, Orange-black surface.

## **SANGUINARIA (Sanguin.) U. S. P.**

**English name:** Sanguinaria.

**Synonyms:** Blood Root, Red Puccoon.

**Botanical origin:** *Sanguinaria canadensis* Linné.  
(Fam. *Papaveraceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Eastern Canada, south to Florida, west to Nebraska.

### **Description:**

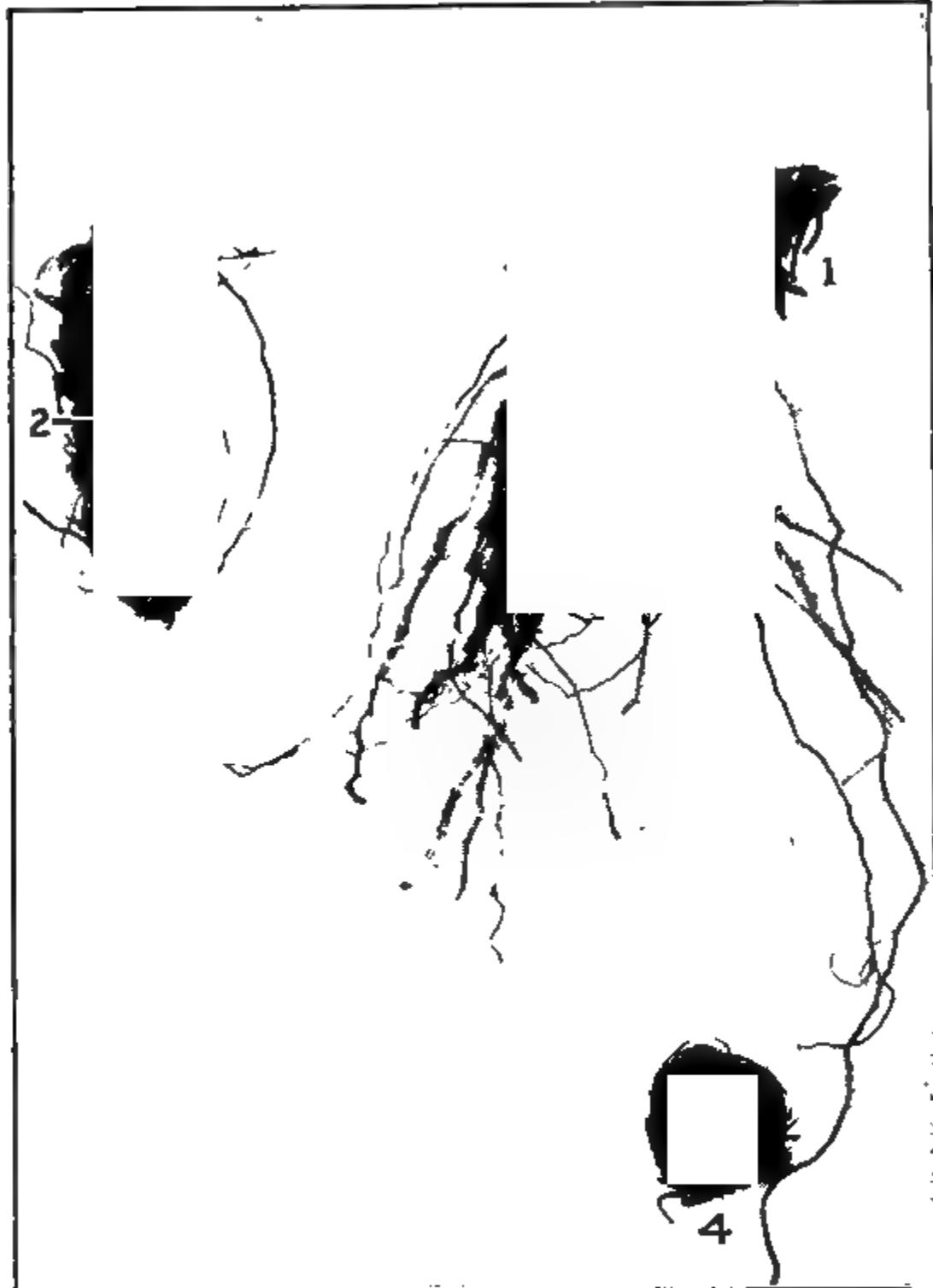
*Sanguinaria* occurs as a mixture of the entire and of the broken pieces of the rhizome and the roots. The rhizomes measure up to 10.5 cm. in length, to 16 mm. in width and to 12 mm. in height. The roots measure up to 1 mm. in width and to 7 cm. in length. The rhizomes are vertically compressed and horizontal; both the rhizomes and roots are simple or branched. The stem scars are depressed and frequently inconspicuous. The younger portion of the rhizome may have one or more yellowish brown leaf scales. The texture is starchy or resinous. The color varies from a grayish to a dark reddish brown. The upper surface has several stem scars and numerous incompletely annulate leaf scars and roots which are more numerous on the under surface. The fracture of the rhizome is tough and uneven. The outline of the rhizome is oval or, less frequently, cylindrical. The cortex is thin and has numerous reddish brown or black circular resin cavities. The wood varies in color from yellowish to brownish to reddish orange. It has numerous resin cavities which may show clearly or be indistinct. The odor is not characteristic. The taste is bitter and acrid.

**Constituents:** Alkaloids (sanguinarine, chelerythrine, protopine), citric and malic acids, resin, starch, etc.

**Dose:** 0.125 Gm. (2 grains).

### **Preparations:**

Fluidextractum *Sanguinariae* N. F.; Dose, 0.1 mil (1  $\frac{1}{2}$  min.).  
Syrupus *Sanguinariae* N. F.; Dose, 2 mils (30 min.).  
Tinctura *Sanguinariae*; Dose, 1 mil (15 min.).



### ALETRIS

1. Rhizome and many roots with and without their cortex.  
2. Stem scar. 3. Stem base. 4. Cross-section of the rhizome.

## ALETRIS (Aletr.) N. F.

**English name:** Aletris.

**Synonyms:** True Unicorn Root, Star Grass.

**Botanical origin:** *Aletris farinosa* Linné. (Fam. *Liliaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 16 per cent.

**Habitat:** Maine to Ontario, south to Florida and Louisiana.

### Description:

*Aletris* occurs as a mixture of the entire and the broken pieces of the rhizome and the roots. The rhizomes measure up to 5.5 cm. in length, and to 12 mm. in width and to 2 cm. in height. The roots measure up to 12 cm. in length and to 1 mm. in diameter. The rhizome is horizontal, simple or non-branched. The roots are tough and wiry, and simple or branched. The *stem scars* are circular, fibrous and hollow. The *stem bases* are often 8 mm. in length. The *texture* of the rhizome is starchy and fibrous, that of the root fibrous. The *color* of the rhizome varies from grayish yellow to grayish brown; that of the roots, gray when the cortex is present, or reddish brown when the cortex is removed. The *upper surface* of the rhizome has numerous fibrous remains of leaf bases and stem scars or stems. Numerous roots are attached to the side and under surface of the rhizome. The *fracture* of the rhizome is strong and tough; the roots have no fracture. The roots have no fracture because they are very strong, fibrous and flexible. The *outline* of the rhizome is irregular, that of the roots cylindrical. The *cortex* is thin and yellowish. The *endodermis* is distinct when magnified. The central cylinder is large, and it has numerous scattered yellowish cylindrical masses of conducting cells. The *odor* is not characteristic. The *taste* is starchy and bitter.

**Constituents:** Starch, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Fluidextractum Aletridis; Dose, 2 mils (30 min.).

## **HYDRASTIS**

**1, A large rhizome with numerous roots. 2, Portion of a stem. 3, Stem scar. 4, Simple rhizome.**

## **HYDRASTIS (Hydr.) U. S. P.**

**English name:** Hydrastis.

**Synonyms:** Golden Seal, Orange Root.

**Botanical origin:** *Hydrastis canadensis* Linné. (Fam. *Ranunculaceæ*.)

**Constituents:** Alkaloids (hydrastine, berberine, canadine), fixed oil, starch, gum, sugar, coloring matter, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Extractum Hydrastis; Dose, 0.5 Gm. (8 grains).

Fluidextractum Hydrastis; Dose, 2 mils (30 min.).

Glyceritum Hydrastis; Dose, 2 mils (30 min.)

Tinctura Hydrastis; Dose, 4 mils (1 fl. dr.).

## **HYDRASTIS**

1. A large rhizome with numerous roots. 2. Portion of a stem. 3. Stem scar. 4. Simple rhizome.

## **HYDRASTIS (Hydr.) U. S. P.**

**English name:** Hydrastis.

**Synonyms:** Golden Seal, Orange Root.

**Botanical origin:** *Hydrastis canadensis* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 2 per cent. of stems, leaves or other foreign matter.

**Assay:** Not less than 2.5 per cent. of ether-soluble alkaloids.

**Ash:** None stated officially.

**Habitat:** Connecticut to Vermont, to Minnesota, south to Georgia and Missouri.

### **Description:**

*Hydrastis* occurs as entire and as broken pieces of the rhizome and roots. The *rhizome* measures up to 6 cm. in length and to 13 mm. in diameter; the *roots* measure up to 30 cm. in length and to 3 mm. in diameter. The rhizome is horizontal and is simple or branched; the *upper surface* has many circular, slightly depressed stem scars, or short stem bases, or portions of stems. The *stems* are fibrous, longitudinally furrowed and greenish brown. They are surrounded at the base by numerous thin yellow scales. The *texture* is slightly fibrous. The *color* varies from yellowish to dark grayish or to reddish brown. The *surface* of the rhizome is annulate and longitudinally striated, that of the roots striated longitudinally. The *fracture* is very brittle and even. The *outline* of the rhizome and roots is cylindrical. The *cortex* of the rhizome is thick. The *wood* has several isolated masses of radial conducting cells and a greenish yellow pith. The *cortex* of the roots is yellowish green. The *wood* is minute and yellowish. The *odor* is slightly aromatic. The *taste* is bitter.

**Constituents:** Alkaloids (hydrastine, berberine, canadine), fixed oil, starch, gum, sugar, coloring matter, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Extractum Hydrastis; Dose, 0.5 Gm. (8 grains).

Fluidextractum Hydrastis; Dose, 2 mils (30 min.).

Glyceritum Hydrastis; Dose, 2 mils (30 min.).

Tinctura Hydrastis; Dose, 4 mils (1 fl. dr.).

## **SPIGELIA**

1, A large branched rhizome with numerous roots. 2,  
Branched root. 3, Stem scar. 4, A branched rhizome freed  
of roots.

## **SPIGELIA (Spig.) U. S. P.**

**English name:** Spigelia.

**Synonyms:** Pink Root, Indian Pink.

**Botanical origin:** *Spigelia marilandica* Linné. (Fam. *Loganiaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** New Jersey to Wisconsin, south to Florida and Texas.

### **Description:**

Pink Root occurs as entire and as broken pieces of the rhizome and roots. The rhizomes measure up to 7 cm. in length and to 5 mm. in diameter. The roots measure up to 10 cm. in length. The *rhizomes* are branched, and they have numerous circular depressed stem scars and stem bases; the latter measure up to 1 cm. in length. The brittle branched roots grow from all parts of the rhizome. The *texture* is non-fibrous. The *color* of the rhizome and roots varies from grayish to brownish black and pinkish brown. The rhizome is usually darker than the roots. The *surface* of the rhizome is finely annulate, the *roots* finely striated longitudinally. The *fracture* is very weak, brittle and uneven. The *outline* of the rhizome and roots is cylindrical. The *cortex* of the rhizome is white, of the wood yellow. The *pith* is white. The roots have a white cortex and small central yellow wood. The *odor* is aromatic. The *taste* is sweet, pungent, bitter and slightly acrid.

**Constituents:** Spigeline (alkaloid), volatile oil, tannin, resin, etc.

**Dose:** 4 Gm. (60 grains).

### **Preparations:**

Fluidextractum Spigeliæ. Dose, 4 mils (1 fl. dr.).

## **SERPENTARIA—TEXAS**

1, Rhizomes with roots. 2, Rhizome freed of roots showing contiguous stem bases. 3, Stems. 4, Fruit and three seeds. 5, A leaf.

**SERPENTARIA (Serpent.) U. S. P.**

**(1) Texas Serpentaria**

Texas Serpentaria.

*ia reticulata* Nuttall.

per cent. of stems or

s, south to Texas.

ture of the entire and broken  
he rhizomes measure up to 3  
meter. The roots measure up  
in diameter. The rhizome is  
It has many contiguous stem  
or with fruits, or with strongly  
blades. The texture is non-  
yish to dark yellowish brown.  
bases is annulate, the surface  
ated longitudinally, and occa-  
very weak, brittle and even.  
the rhizome, stem bases and  
the rhizome is white, of the  
odor is aromatic like turpen-  
er.

ster principle, tannin,

Dose, 1 mil (15 min.).  
3, 4 mils (1 fl. dr.).  
1 mils (1 fl. dr.).

## **SERPENTARIA—VIRGINIA**

1. Rhizome with its mass of fine branching roots. 2, Leaf.  
3, Seed. 4, Fruit with numerous seeds. 5, Rhizome freed  
of roots.

## SERPENTARIA (Serpent.) U. S. P.

### (2) Virginia Serpentaria

root, Virginia Serpentaria.

*ochia Serpentaria* Linné.

)

ots.

10 per cent. of stems or

Michigan, south to Florida

s a mixture of entire and broken ots. The rhizome measures up to m in diameter; the roots measure , 1 mm. in diameter. The rhizome is opaque or simple, or branched. It has several short, contiguous stem bases, or stems with flowers or with fruit, or with an occasional leaf. The texture is non-fibrous. The color is yellowish brown. The surface of the rhizome and stem bases is finely annulate. The roots are finely striated longitudinally. The fracture is very neat, brittle and even. The outline of the rhizome, stem bases and roots is cylindrical. The cortex is grayish. The wood is yellowish. The cortex of the root is grayish, that of the wood minute and yellowish. The odor is aromatic like turpentine. The taste is pungent and bitter.

**Constituents:** Volatile oil, bitter principle, tannin, starch, sugar, gum, resin.

### Preparations:

Fluidextractum Serpentariae N. F.; Dose, 1 mil (15 min.).

Tinctura Cinchonae Composita; Dose, 4 mils (1 fl. dr.)

Tinctura Serpentariae N. F.; Dose, 4 mils (1 fl. dr.)

## **HELONIAS**

1. Oblique rhizome with roots and prominent stem bases.  
2. Stem base. 3. Surface view of stem base. 4. Leaf bases  
which are attached to young rhizomes. 5. Longitudinal sec-  
tion of rhizome. 6. Cross-section of the rhizome.

## **HELONIAS (Helon.) N. F.**

**English name:** Helonias.

**Synonyms:** Blazing Star, False Unicorn.

**Botanical origin:** *Chamælirium luteum* (Linné) A. Gray. (Fam. *Liliaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Massachusetts to Ontario, to Michigan, south to Florida, and west to Arkansas.

### **Description:**

*Helonias* occurs as a mixture of the entire and broken rhizomes and the roots. The rhizomes measure up to 7 cm. in length and to 15 mm. in diameter. The roots measure up to 9 cm. in length and to 2 mm. in diameter. Young rhizomes are erect; older rhizomes are oblique. Both the rhizomes and roots are simple. The stem scars are prominent and raised above the surface of the rhizome. The youngest portion of the rhizome has numerous yellowish imbricated leaf bases. The texture of both the rhizome and the root is resinous and fibrous. The outline of the rhizome and roots is cylindrical. The cortex, which is thick and yellowish gray, has brown cavities formed by decaying roots. The endodermis is distinct. The central cylinder has numerous grayish yellow groups of conducting tissue. The pith is central and dark yellowish brown. The odor is not characteristic. The taste is strongly bitter.

**Constituents:** Glucoside (chamælirin), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Heloniadis; Dose, 2 mils (80 min.).

## **ARALIA**

1, Root with a wrinkled surface. 2, Rhizome with large contiguous stem scars. 3, Longitudinal section of the rhizome. 4, Longitudinal section of the root. 5, Cross-section of the root.

## **ARALIA (Aral.) N. F.**

**English name:** Aralia.

**Synonyms:** American Spikenard Root, Spignet Root.

**Botanical origin:** *Aralia racemosa* Linné. (Fam. *Araliaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** Not more than 5 per cent. of adhering stem bases or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Canada to Florida, west to Rocky Mountains.

### **Description:**

*Aralia* occurs as a mixture of broken and as cut slices of the rhizomes and roots. The rhizome measures up to 20 cm. in length and to 6 cm. in diameter. The roots measure up to 4 cm. in length and to 27 mm. in diameter. The rhizome is oblique, simple or branched, and has large, depressed, contiguous stem scars. The texture is fibrous. The color varies from pale yellow to deep purplish brown. The rhizome is rough and annulate between the stem scars. The roots are longitudinally furrowed and have transversely elongated ridges and root scars. The fracture of the cortex is brittle and even, that of the wood tough. When moist the root is pliable. The outline of sections is cylindrical or irregular. The cortex is thick and yellowish white and has brown oleoresin cavities; the tissue is irregularly porous when magnified. The cambium zone is distinct. The wood is yellowish, distinctly radiate and loosely arranged. The pith is white and porous. The odor is aromatic. The taste is sweet, pungent or acrid.

**Constituents:** Starch, pectin, sugar, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Aralie; Dose, 2 mils (30 min.).

2



### PIMPINELLA

1, Nodulated surface of the root. 2, Crown with many stem bases. 3, Stem scar. 4, Dark cambium zone. 5, Wood.

## PIMPINELLA (Pimpinell.) N. F.

**English name:** Pimpinella.

**Synonyms:** Pimpernel Root.

**Botanical origin:** *Pimpinella Saxifraga* Linné or *Pimpinella magna* Linné. (Fam. *Umbelliferae*.)

**Part used:** Rhizome and roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Europe.

### Description:

Pimpinella occurs as a mixture of entire, of broken pieces and of cut slices of the rhizome and root. They measure up to 18 cm. in length and to 3 cm. at the crown. The rhizome and root are vertical and oblique. The root is usually simple, but the crown is multiple. The stem scars are numerous, circular and depressed. The texture is non-fibrous. The color is light brownish yellow. The surface of the crown and its branches is annulate; the surface of the root is longitudinally striated, and both the crown and the root are slightly nodulated. The fracture is very weak, brittle and uneven when dry, but pliable when moist. The outline is nearly circular. The cortex is thick and has numerous groups of radially arranged brown phloem tissue. The cambium zone is distinct and dark brown. The wood is yellowish and radiate. The pith is small and light yellow. The odor is aromatic. The taste is sweet and pungent.

**Constituents:** Volatile oil, resin, benzoic acid, pimpinellin, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Tinctura Pimpinellæ; Dose, 4 mils (1 fl. dr.).

## RHEUM

1, Large piece of the root showing the wrinkled and sunken surface. 2, Cross-section of a root. 3, Irregular perforation through which a string is passed in drying the drug. 4, Square of cut rhubarb. 5, Rectangular piece of the root.

## RHEUM U. S. P.

**English name:** Rhubarb.

**Synonyms:** Rhubarb Root.

**Botanical origin:** *Rheum officinale* Baillon, *Rheum palmatum* Linné, and the var. *tanguticum* Maximowicz, and probably other species of *Rheum* grown in China and Thibet. (Fam. *Polygonaceæ*.)

**Part used:** Peeled rhizomes and roots.

**Impurities:** None given.

**Assay:** Yields not less than 30 per cent. of extractive to diluted alcohol.

**Ash:** Not more than 13 per cent.

**Habitat:** China and Thibet.

long transverse, or as oblique pieces, or as larger pieces of the peeled rhizome and roots; simple. Leaf scars or leaf bases are present up to 15 cm. in length and to 15 mm. in diameter, and frequently has an irregular outline which a string is inserted when the drug is very strong and tough, and requires a sharp edge to cut it. The cortex is mottled with radial reddish brown medullary tissue parenchyma tissue, or the mottling may be in the larger pieces is dark brown. The taste is bitter and astringent.

sophanic acid, emodin, rhein, tannin, glucoside (glucogallum), bitter principle, starch, etc.

**Dose:** 1 Gm. (15 grains).

**Preparations:**

Fluidglyceratum Rhei N. F.; Dose, 1 mil (15 min.). Mistura Rhei Alkalina N. F.; Dose, 4 mils (1 fl. dr.). Mistura Rhei Composita N. F.; Dose, 4 mils (1 fl. dr.). Pilulae Rhei N. F.; Dose, 1 pill. Extractum Rhei; Dose, 0.25 Gm. (4 grains). Fluidextractum Rhei; Dose, 1 mil (15 min.). Pilulae Rhei Compositæ; Dose, 2 pills. Pulvis Rhei Compositus; Dose, 2 Gm. (30 grains). Syrupus Rhei (from fluidextract); Dose, 10 mils (2½ fl. drs.). Syrupus Rhei Aromaticus (from aromatic tincture); Dose, 10 mils (2½ fl. drs.). Tinctura Rhei Aromatic; Dose, 4 mils (1 fl. dr.). Tinctura Rhei Aquosa N. F.; Dose, 4 mils (1 fl. dr.). Tinctura Rhei Dulcis N. F.; Dose, 2 mils (30 min.). Tinctura Rhei et Gentianæ N. F.; Dose, 4 mils (1 fl. dr.). Pulvis Rhei et Magnesia Animatus N. F.; Dose (for infants), 0.3 Gm. (6 grains). Vinum Rhei Compositum N. F.; Dose, 4 mils (1 fl. dr.).

## **KAVA**

1, Irregular piece of the root. 2, Transverse section showing the radiate and slightly concentric wood. 3, Large pith.

## **KAVA (Kava) N. F.**

**English name:** Kava.

**Synonyms:** Methysticum, Kava Kava.

**Botanical origin:** *Piper methysticum* Forster. (Fam. *Piperaceæ*.)

**Part used:** Rhizome and roots.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Polynesian Islands.

### **Description:**

Kava occurs as a mixture of long-cut transverse and irregular-cut sections. The pieces measure up to 10 cm. in width and to 20 cm. in length. Portions of the cut stem have a central hollow pith. The texture is coarse, fibrous and starchy. The color varies from grayish brown to nearly black. The surface is longitudinally wrinkled and transversely annulate. The fracture is very strong, tough and uneven. The outline of the sections is irregular. The cortex is very thin. The wood is distinctly concentric or occasionally radiate. The pith is large, pinkish or yellowish gray and sunken. The odor is not characteristic. The taste is starchy, sweet, slightly bitter and pungent.

**Constituents:** Resins, methysticin, glucosides, alkaloid, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Kavæ; Dose. 1 mil (15 min.).

## **SUMBUL**

1. Multiple crown with fibrous remains of stem bases.
2. A large resinous root.
3. Cross-section of a small root.
4. Branched and irregularly thickened wood.

## **SUMBUL (Sumb.) U. S. P.**

**English name:** Sumbul.

**Synonyms:** Musk Root, Sumbul Root.

**Botanical origin:** *Ferula Sumbul* (Kauffmann)  
Hooker filius. (Fam. *Umbelliferae*.)

**Part used:** Rhizome and roots.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Central and Northern Asia.

### **Description:**

Sumbul occurs as a mixture of the long and short transverse sections of the rhizome and of the root. The pieces measure up to 20 cm. in length and to 12.2 cm. in width. The rhizome is vertical. The crown is branched, and so is an occasional root. The crown has numerous fibrous remains of stem bases. The texture is coarsely fibrous and resinous. The color of the rhizome and roots varies from grayish yellow to dark-reddish brown. The surface of the rhizome is annulate; of the roots, longitudinally wrinkled or smooth. The fracture is very strong, tough and uneven. The outline is cylindrical. The cortex is thick. In the older roots the thickness is variable. The wood is yellowish white in color and radiate and cylindrical. The odor is slightly aromatic. The taste is bitter or pungent.

**Constituents:** Volatile oil, resin, valeric and other acids, bitter extractive, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Extractum Sumbul; Dose, 0.25 Gm. (4 grains).

Fluidextractum Sumbul; Dose, 2 mils (30 min.).

Tinctura Sumbul N. F.; Dose, 4 mils (1 fl. dr.).

## CHAPTER IV

### **TUBEROUS ROOTS, BULBS AND CORMS**

**I**N the study of tuberous roots, bulbs and corms, the following must be considered: Occurrence, size, type, nature, stem bases or scars, texture, color, surface, fracture, outline, cortex, wood (central cylinder), odor and taste.

1. **Occurrence.** Aconite and corydalis occur in the entire condition; colchicum and squill and occasionally jalap occur in the cut condition.
2. **Size.** Of this class of drugs jalap is the largest. It frequently measures 11 cm. in diameter.
3. **Type.** Aconite, jalap and corydalis, the entire drugs, are vertical.
4. **Nature.** Aconite and jalap are frequently branched, the others are simple.
5. **Stem Bases or Scars.** Large stem bases are present in aconite and garlic. In colchicum the growth of the corm around the stem forms the groove or scar of the corm. In the others, the scars are not diagnostic.
6. **Texture.** The texture of jalap is resinous, of aconite and colchicum starchy and resinous, of scilla and corydalis mucilaginous.
7. **Color.** The color of aconite is grayish brown, of jalap reddish brown, of scilla yellowish white, of corydalis yellow to reddish brown, of allium white or pink, of colchicum brownish black.
8. **Surface.** The surface of aconite is wrinkled, of jalap furrowed, of scilla rough with projecting vascular bundles, of allium with striated scales, of corydalis granular, of colchicum rough.
9. **Fracture.** Jalap and corydalis are too tough to

be fractured ; aconite, squill, allium and colchicum are brittle.

10. **Outline.** The outline of aconite is cylindrical or irregular, of jalap and sections of squill irregular ; of corydalis, circular or irregular ; of colchicum reniform or ovate.

11. **Cortex.** The cortex of aconite is thick, of jalap thin, of squill, corydalis and colchicum there is no distinct cortex.

12. **Wood and Central Cylinder.** In aconite, the wood is 5 to 7 angled, in jalap mottled, in squill not distinct, in corydalis and colchicum with oleoresin tubes.

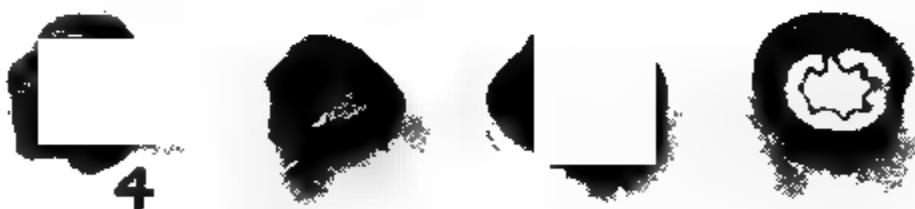
13. **Odor.** The odor of jalap is smoky, of allium strongly aromatic ; in the others it is not characteristic.

14. **Taste.** The taste of aconite is sweet, acrid and tingling ; of jalap, sweet and acrid, of squill sweet, bitter and strongly pungent, of colchicum bitter and acrid.

2



3



4

## ACONITUM

1. Cluster of two tuberous roots, the older one on the left. 2. Surface view of the crown. 3. Cross-section of an old shriveled root. 4. Cross-section showing 5, 6, 7, and 8-angled wood.

## ACONITUM (Aconit.) U. S. P.

**English name:** Aconite.

**Synonyms:** Monkshood, Aconite Root.

**Botanical origin:** *Aconitum Napellus* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Tuberous roots.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** 0.5 per cent. of ether-soluble alkaloids.

B. A.—Minimum lethal dose should not be greater than 0.00004 mil for each gramme of body weight of guinea-pig.

**Ash:** Not more than 6 per cent.

**Habitat:** Mountainous regions of Europe and Asia; cultivated in England.

### Description:

Aconite occurs as clusters of two and three tuberous roots, and as roots separated from clusters. The roots measure up to 11 cm. in length and to 3 cm. in width at the crown. The tuberous roots are fleshy or thickened roots. They are simple or rarely branched. The old shriveled rhizome has stem scars, or the basal portion of stems with a hollow pith. The texture is starchy or resinous. The color is gray to dark reddish brown. Roots which have produced stems, flowers, etc., are deeply wrinkled longitudinally and slightly twisted, and have large root scars and root fragments. The fracture is brittle and even. The outline is cylindrical or irregular. The cortex is thick and yellow or grayish brown. The cambium zone is distinct and yellow or brown. The wood is 5, 6, 7 or 8 angled, and in each angle there is a conducting strand. The pith is large and parenchymatic, gray and starchy, except in the older roots, where it is hollow or fissured and non-starchy. The odor is not distinct. The taste is sweet, acrid, tingling and numbing.

**Constituents:** Alkaloids (aconitine, benzaconine, aconine and napelline), aconitic acid, starch, resin, fat, sugar, etc.

**Dose:** 0.03 Gm. ( $\frac{1}{2}$  grain).

### Preparations:

Extractum Aconiti; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Fluidextractum Aconiti; Dose, 0.03 mil ( $\frac{1}{2}$  min.).

Linimentum Aconiti et Chloroformi N. F.

Tinctura Aconiti; Dose, 0.3 mil (5 min.).

## JALAPA

1, An elongated root. 2, Sunken surface of the root.  
3, A typical black and gray surfaced root. 4, Cortex. 5,  
Mottled wood. 6, Branched tuberous root.

## JALAPA (Jalap.) U. S. P.

English name: Jalap.

*jonium Purga* (Wenderoth)  
*onvolvulaceæ.*)

it.

in U. S. P.

per cent. of total resins.

per cent.

ated in Mexico and India.

and cut pieces of tuberous roots, or is  
ongitudinally to aid in drying. Jalap  
cm. and in width to 11 cm. The tuber-  
ed root. It is simple or branched. The  
l it has a rounded stem scar. The tex-

The color is dark reddish brown; the  
yellow. The surface is rough. This is  
t transverse ridges and by deep longi-  
ture cannot be made. The broken sur-  
face is irregular, rounded or oval. The  
le in thickness. The cambium zone is  
. distinct. The wood has dark brown  
ucting tissue and grayish brown paren-  
is smoky. The taste is sweet and acrid.

**Constituents:** Resins (convolvulin, jalapin), sugar,  
gum, starch, coloring matter.

**Dose:** 1 Gm. (15 grains).

**Preparations:**

Extractum Jalape N. F.; Dose, 1 Gm. (15 grains).  
Fluidextractum Jalape N. F.; Dose, 1 mil (15 min.).  
Pilule Catharticae Compositæ (from Resin); Dose, 2 pills.  
Pulvis Jalape Compositus; Dose, 2 Gm. (30 grains).  
Resina Jalape; Dose, 0.125 Gm. (2 grains).  
Tinctura Jalape N. F.; Dose, 4 mils (1 fl. dr.).  
Tinctura Jalape Composita N. F.; Dose, 4 mils (1 fl. dr.).

## **SCILLA**

1, Concentric slices of squill bulb. 2, Typical curved piece.  
3, Irregular pieces of the bulb.

## **SCILLA (Scill.) U. S. P.**

**II Bulb.**

**variety of *Urginea maritima*  
m. Liliaceæ.)**

**scales of the bulb.**

**n U. S. P.**

**size should be not greater than  
or the equivalent in tincture  
ouabain for each gramme of**

**basin.**

**1 broken concentric, transverse slices.  
tunicated bulb resembling the onion.  
1 cm. in length and to 8 mm. in thick-  
ness or stem scars present in the drug.  
s or gummy. The color varies from  
the uncut surface is smooth and dull.  
with projecting masses of conducting  
parallel to and near the inner surface  
is very weak and brittle when squill is  
moist. The outline of the sections is  
stems are not clearly defined in the  
The taste is sweet, bitter and acrid.**

**Constituents:** Volatile oil, sugar, mucilage, glucosides  
(scillin, scillipierin, scillitoxin), etc.

**Dose:** 0.1 Gm. (1½ grains).

### **Preparations:**

**Acetum Scilleæ;** Dose, 1 mil (15 min.).

**Fluidextractum Scilleæ;** Dose, 0.1 mil (1½ min.).

**Oxymel Scilleæ N. F.;** Dose, 4 mils (1 fl. dr.).

**Syropus Scilleæ** (from vinegar); Dose, 2 mils (30 min.).

**Syropus Scilleæ Compositus** (from fluidextract); Dose, 2 mils  
(30 min.).

**Tinctura Scilleæ;** Dose, 1 mil (15 min.).

## **CORYDALIS—TURKEY CORN**

1, Many tubers of variable form. 2, Triangular scar on the upper side of the tuber. 3, Branched rhizome bearing tuber. 4, United tubers.

## **CORYDALIS (Coryd.) N. F.**

### **(1) Turkey Corn**

**English name:** Corydalis.

**Synonyms:** Turkey Corn, Round Turkey Corn, Squirrel Corn.

**Botanical origin:** *Bicuculla canadensis* (Goldie) Mills-paugh. (Fam. *Fumariaceæ*.)

**Part used:** Dried tubers.

**Impurities:** Not more than 5 per cent. of other parts of the plants or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Nova Scotia to Minnesota, south to North Carolina and Missouri.

#### **Description:**

Round turkey corn occurs as entire, separated tubers, and rarely as united tubers. These tubers measure up to 16 mm. in diameter and to 8 mm. in height. The tubers are vertical and about twice as wide as they are high. The upper surface is marked with a triangular, depressed scar or scale. The texture is gummy, horny, and starchy. The color varies from yellowish to reddish and brownish black. The surface of the tubers is smooth, but granular in appearance, because it has small depressions. The upper surface is concave and has a triangular scar. The under surface is concave and with portions of the slender, branched rhizome with stem bases. The fracture cannot be made. The broken surface is even. The surface frequently is whitish yellow and has yellow resin cavities with resin. The outline of the section is circular or oval. The cortex and stele are not distinct. The odor is not characteristic. The taste is bitter.

**Constituents:** Alkaloids (corydaline, bulbocarpnine, etc.), fumaric acid, bitter extractive, resin, starch, etc.

**Dose:** 0.65 Gm. (10 grains).

#### **Preparations:**

Elixir Corydalis Compositum; Dose, 4 mils (1 fl. dr.).  
Fluidextractum Corydalis; Dose, 0.65 mil (10 min.).

## **CORYDALIS—DUTCHMAN'S BREECHES**

1, Numerous scaly bulbs of variable size and form. 2,  
Rhizome bearing bulbs. 3, Outer thick concave scale. 4,  
Surface view of bulb.

## **CORYDALIS (Coryd.) N. F.**

### **(2) Dutchman's Breeches**

**English name:** Corydalis.

**Synonyms:** Dutchman's Breeches, Soldier's Cap.

**Botanical origin:** *Bicuculla Cucullaria* (Linné) Mills-paugh. (Fam. *Fumariaceæ*.)

**Part used:** Scaly bulbs.

**Impurities:** Not more than 5 per cent. of other parts of the plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Nova Scotia to Minnesota, south to Georgia, and west to Nebraska.

#### **Description:**

Dutchman's breeches occurs as the entire and as separated parts of the scaly bulb. The whole bulbs measure up to 2 cm. in width and to 17 mm. in height. The bulbs are usually scaly, having two large outer scales and one small central scale. No stem scars or stems occur on the fleshy scales, because the stems originate from the slender, branched rhizome, which has a number of stem bases. The texture is gummy, or horny and starchy. The color varies from light yellow to dark grayish or reddish brown. The upper surface terminates in a pointed, triangular, scale-like scar and tapers downward; the inner surface is concave. The under surface is tapering and is attached to a slender, branched rhizome with numerous stem bases. The fracture cannot be made. The broken surface is even. The outline of sections is irregular; the outer surface of the scales is convex; the inner surface is concave. The cortex and stele of the scales are not distinguishable. The surface resembles a mass of gum, or is granular and starchy with small, resin cavities. The odor is not characteristic. The taste is bitter.

**Constituents:** Alkaloids (corydaline, bulbocarpnine, etc.), fumaric acid, bitter extractive, resin, starch, etc.

**Dose:** 0.65 Gm. (10 grains).

#### **Preparations:**

Elixir Corydalis Compositum; Dose, 4 mils (1 fl. dr.).  
Fluidextractum Corydalis; Dose, 0.65 mil (10 min.).

## **ALLIUM**

1. A large bulb. 2. A bulb with the outer scale removed to show smaller bulbs. 3. Stem growing from the center of the compound bulb. 4. Disk-like base of the compound bulb. 5. Single bulb. 6. Cross-section of the bulb showing the scattered conducting strands.

## ALLIUM (Alli.) N. F.

*m sativum* Linné. (Fam. Lili-

1 officially.

cultivated extensively; Italy is

bladed strands of entire bulbs. The bulbs length and 6.7 cm. or less in diameter a compound, and they are outgrowths of isome. The smooth, white stems measure

The texture is moist and non-fibrous. blite to pink. The surface of the scales and individual bulbs has many elevated, bulbs are brittle and the fracture is even. bulb is cylindrical, of the smaller bulbs distinction into cortex and central cylinder show distinctly. The odor is very aromatic. The taste is very strongly

, albumin, sugar, starch, vola-

s).

, 4 mils (1 fl. dr.).



5

### **COLCHICI CORMUS**

1, Reniform section of the corm. 2, Groove formed by the growing stem. 3, Longitudinal section showing the groove formed by the growing stem. 4, Longitudinal section showing parallel lines of resin tissue. 5, Round resin masses.

## **COLCHICI CORMUS (Colch. Corm.) U. S. P.**

**English name:** Colchicum Corm.

**Synonyms:** Colchicum Root.

**Botanical origin:** *Colchicum autumnale* Linné. (Fam. *Liliaceæ*.)

**Part used:** Corm.

**Impurities:** None given.

**Assay:** Not less than 0.35 per cent. of colchicine.

**Ash:** Not more than 6 per cent.

**Habitat:** Germany, Austria and England.

### **Description:**

Colchicum corm occurs as a mixture of transverse and longitudinal slices of the cormus. These slices measure up to 3.5 cm. in width or length and to 1 cm. in thickness, but usually less than 5 mm. in thickness. The rhizome is vertical and deeply grooved on one side. Stem bases are never present, but the groove is caused by the stem, which originates underneath and then grows along the side of the corm. The texture is resinous and starchy. The color of the uncut surface is yellowish or brownish black. The uncut surface is smooth and indistinctly striated. The fracture is weak, brittle and even. The outline of the transverse slices is reniform, of the longitudinal slices broadly ovate and truncate. The cortex and stele are not distinguishable. The transverse sections have numerous round resin masses, while longitudinal sections have parallel resin masses. The color of the cut surfaces varies from grayish white to brown. The odor is not characteristic. The taste is starchy, bitter and acrid.

**Constituents:** Colchicine (alkaloid), resin, fat, starch, etc.

**Dose:** 0.25 Gm. (4 grains).

### **Preparations:**

Extractum Colchici Cormi; Dose, 0.06 Gm. (1 grain).

Fluidextractum Colchici Cormi N. F.; Dose, 0.2 mil (3 min.).

Vinum Colchici Cormi N. F.; Dose, 0.65 mil (10 min.).

## CHAPTER V

### BARKS

**I**N the study of barks the following must be considered: Occurrence, size, nature, outer surface, inner surface, fracture and tenacity, fractured surface, odor and taste.

**1. Occurrence.** This refers to the condition of the bark, whether broken pieces, as sassafras and most barks, or cut, as cinchona.

**2. Size.** The length of pieces of bark varies from a few millimeters up to 3 dm., as in mezereum. The width varies from a few millimeters up to 5 dm., as in white pine bark. The thickness varies from less than a millimeter up to 10 mm., as in canella.

**3. Nature.** This refers to the form of the bark, whether flat or chip-like, as in cornus; or flat or slab-like, as in elm bark and soap bark; or partially quilled—*i.e.*, the outer edges curved upward, as in chionanthus; or quilled—*i.e.*, the outer bark edges just coming together and touching, as in condurango; or overlapping quilled—*i.e.*, one edge of the bark curved or rolled inside of the other edge, as in cascara sagrada; or double quilled—*i.e.*, two quills formed by the rolling inward of the two longitudinal edges of the bark, as in cascara sagrada; or multiple quilled—*i.e.*, a quill composed of several quills or overlapping quills, one within the other, as in Ceylon cinnamon.

**4. Outer Surface.** The study of the outer surface embraces the color as well as the markings. The color of the outer surface of the different barks varies greatly, but each bark has a characteristic color.

**The Markings of the Outer Surface.** The surface is *striated* when it has parallel markings caused by variable coloration, as in Ceylon cinnamon, or by very

shallow parallel elevations and depressions; as in paracoto; furrowed when it has sharply defined parallel elevations and depressions, as in red cinchona; wrinkled when it is irregularly contracted into furrows, as in cinchona; fissured when it has narrow openings caused by a separation of the tissues during drying. The surface is fissured longitudinally when the fissures occur parallel to the length of the bark, as in cocillana bark; or transversely fissured when they occur crosswise or at right angles to the length of the bark, as in cascarilla bark; or irregularly fissured when they occur irregularly, as in quebracho.

Elevations of the surface include lenticels, corky elevations, and thorns, or a combination of cork and thorns. Lenticels vary in form, size, color and arrangement. The most common forms are the circular lenticels, as in juglans; and the lens-shaped lenticels, as in wild cherry bark. The size of lenticels varies greatly in the different barks. The color of lenticels varies greatly. In cramp bark they are brown; in southern prickly ash bark they are yellowish; in canella and in peeled wild cherry bark they are nearly white.

The arrangement of lenticels is variable. In frangula, as in most barks, they are scattered or irregularly arranged; in wild cherry they occur in parallel transverse lines. Corky elevations with or without thorns occur on the surface of southern prickly ash bark.

The outer surface of wahoo bark shows numerous V-shaped yellowish masses of tissue. The surface of butternut is layered. Quebracho has a reddish brown outer layer and an inner yellowish layer; in cinchona and red cinchona and cocillana the outer layer is granular, the inner, fibrous; condurango has long projecting bast fibers; in southern prickly ash bark the surface is radiate.

**5. Inner Surface.** The study of the inner surface embraces the color and the markings. The color of the inner surface of barks is variable. The most common shades are grays, yellows, reds and browns. In

most cases the color is a mixture. The most common of all is yellowish brown, which varies in intensity in the different barks. Quebracho, frangula, black haw, ulmus, white pine, and Ceylon cinnamon have a yellowish brown inner surface, yet in each the shade is sufficiently variable to be recognizable. Reddish brown is the color of the inner surface of cinchona, red cinchona, paracoto, wild cherry and Saigon cinnamon. Cascara and frangula are frequently purplish brown. The color of granatum, cramp bark, and xanthoxylum is greenish yellow. Canella and quillaja are yellowish white. Mezereum is greenish gray, etc.

**The Markings of the Inner Surface.** In cascara the surface is smooth, or free of markings. In soap bark and canella the surface is granular.

In most barks the surface is dull and striated. The striations may be fine and short striated, as in cornus; or coarse and short, as in quercus; or fine and long striated, as in mezereum; or coarse and long striated, as in ulmus; or irregularly striated, as in quebracho.

The surface is fissured, as in wild cherry bark and in red cinchona.

The surface is corrugated, as in white pine bark.

The surface is scaly, as in northern prickly ash and in cramp bark.

In cocillana the tissue of the inner bark separates into layers. In cotton root bark, ulmus, condurango, quercus and in mezereum the fibers become detached and project from the surface.

The inner surface of cotton root bark has numerous black oleoresin cavities.

## FRACTURE AND TENACITY

**Fracture Tenacity.** The fracture may be even, as in granatum; uneven, as in cascara; conchoidal, as in granatum; or hackly, as in cinchona.

6. **Tenacity.** By tenacity is meant the resistance which a bark offers to tearing stresses.

For the purpose of study the barks are divided into

three classes according to their tenacity. 1. Barks too tough to be fractured—*i.e.*, barks that have no fracture, as in mezereum and cotton root. 2. Barks that have an incomplete fracture—*i.e.*, that break part way, as in elm bark, white pine, white oak, blackberry bark, cocillana, butternut, soap bark, and white ash. 3. Barks that can be fractured. These barks are divided into six classes: (1) Very weak brittle barks; (2) weak brittle barks; (3) brittle barks; (4) tough barks; (5) very tough barks; (6) strong tough barks.

The very weak brittle barks include cramp bark, black haw stem bark, Ceylon cinnamon, and cascarilla.

The weak brittle barks include euonymus, northern prickly ash, wild cherry, cornus, and sassafras.

The brittle barks include black haw root bark, cascara, pomegranate, southern prickly ash, and frangula.

The tough barks include red cinchona, cinchona, canella, condurango, fringe-tree bark, and bayberry bark.

The strong tough barks include quebracho and paracoto.

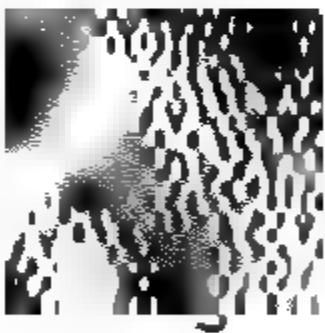
The very strong tough barks are those cited above as having an incomplete, or as having no fracture.

7. **Fractured surfaces** show projecting fibers, as in cocillana; projecting stone cells in groups, as in fringe-tree bark; or pits, as in fringe-tree bark.

8. **Odor.** Most barks have no characteristic odor. Exceptions are paracoto, canella, black haw (slight), cascarilla, ulmus, Saigon cinnamon, Ceylon cinnamon, fringe-tree, and sassafras, which have aromatic odors that are diagnostic for each drug.

9. **Taste.** Most barks have a succession of tastes—*i.e.*, bitter and astringent, as in quebracho, cinchona, red cinchona, cornus, and euonymus; sweet and pungent, as in Ceylon cinnamon and Saigon cinnamon, etc.

Those barks having simple tastes (one taste) include quercus and granatum, which are astringent; soap bark, which is acrid; and paracoto, which is pungent.



## CORNUS

1, Scaly outer surface of the bark. 2, Flat, finely striated inner surface. 3, Small chip-like piece. 4, Irregular fragment of the bark.

## CORNUS (Corn.) N. F.

English name: Cornus.

Dogwood Bark.

Linné. (Fam. Cor-

h to Florida and

in longitudinal pieces of  
to 8 cm. in length, and to  
flat or curved outward.  
own where the cork has  
frequently abraded. The  
tly projecting groups of  
brown. The fracture is  
d surface has projecting  
he odor is not character-

**Constituents:** Bitter principle (cornin), resin, fixed oil, gallic acid, tannin, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Corni; Dose, 2 mils (30 min.).

## **CHIONANTHUS**

1. Outer surface of the bark, slightly annulate above. 2. Longitudinally striated inner surface. 3. Circular lenticel.  
4. Cross-section showing small pits and groups of stone cells.

## **CHIONANTHUS (Chionant.) N. F.**

**English name:** Chionanthus.

**Synonyms:** Flowering Ash, Fringe Tree Bark.

**Botanical origin:** *Chionanthus virginica* Linné. (Fam. *Oleaceæ*.)

**Part used:** Bark of the root.

**Impurities:** Not more than 8 per cent. of other parts of the plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Pennsylvania, south to Florida and Texas.

**Description:**

Fringe Tree Bark occurs as irregular broken pieces. These pieces measure up to 13 cm. in length, to 5.5 cm. in width, and to 8 mm. in thickness. The pieces of bark may be nearly flat and partially quilled, and quilled. The outer surface varies in color from grayish yellow to grayish brown. It is rough, annulate, and frequently pitted, or it has circular lenticels. The inner surface varies in color from grayish to yellowish to reddish brown. It is longitudinally striated. The fracture of the bark is tough and uneven. The fractured surface is yellowish white. It has numerous pits and projecting masses of stone cells. The odor is aromatic. The taste is very bitter.

**Constituents:** Glucoside, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Chionanthi; Dose, 2 mils (30 min.).

## **EUONYMUS**

1. Deeply furrowed outer surface. 2. Bark from a smaller root. 3. Smooth, finely striated inner surface. 4. Cut edge of the bark.

## **EUONYMUS (Euonym.) N. F.**

**English name:** Euonymus.

**Synonyms:** Burning Bush, Wahoo Bark.

**Botanical origin:** *Euonymus atropurpureus* Jacquin.  
(Fam. Celastraceæ.)

**Part used:** Dried bark of the root.

**Impurities:** Not more than 3 per cent. of wood or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Southeastern United States, west to Arkansas and Indian Territory.

### **Description:**

*Euonymus* occurs as irregular broken pieces. These pieces measure up to 11 cm. in length, to 5 cm. in width, and to 6 mm. in thickness. The pieces of bark may be partially quilled, or quilled. The outer surface varies in color from a yellowish gray to grayish brown, and it is nearly smooth, or deeply furrowed longitudinally. The inner surface is yellowish brown and smooth to the touch, but is finely striated. The fracture is weak and brittle. The fractured surface shows numerous interrupted V-shaped masses of nearly white tissue alternating with the yellowish brown tissue which makes up the remaining part of the bark. The odor is not characteristic. The taste is slightly sweet, bitter and acrid.

**Constituents:** Bitter principle (euonymin), acids, fixed and volatile oils, resins, wax, pectin, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Extractum Euonymi; Dose, 0.125 Gm. (2 grains).  
Fluidextractum Euonymi; Dose, 0.5 mil (8 min.).

2



3

## MYRICA

1, Portion of the bark without the corky layer. 2, Piece of the corky layer. 3, Cross-section of the bark. 4, A thick piece of the bark.

## **MYRICA N. F.**

**English name:** Bayberry Bark.

**Synonyms:** Wax Myrtle, Candleberry.

**Botanical origin:** *Myrica cerifera* Linné. (Fam. *Myricaceæ*.)

**Part used:** Dried bark of root.

**Impurities:** Not more than 5 per cent. of adhering wood.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Maryland to Arkansas, south to Florida and Texas.

### **Description:**

Bayberry occurs as irregular broken pieces. These pieces measure up to 15 cm. in length, to 2 cm. in width and to 4 mm. in thickness. The pieces are partially quilled, or quilled. The outer surface is grayish yellow and smooth, and has cylindrical elevated lenticels. The bark without the corky layer is smooth or finely striated and reddish brown. The fracture is tough and uneven. The fractured surface is yellowish brown and has numerous projecting bast fibers. The odor is not characteristic. The taste is astringent, pungent and pepper-like.

**Constituents:** Volatile oil, coloring matter, tannin, resins, gum, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Pulvis Myricæ Compositus; Dose, 1 Gm. (15 grains).

## **GOSSYPII CORTEX**

1, Scaly outer surface of the bark. 2, Tangled mass of the tough bark.

## **GOSSYPII CORTEX (Gossyp. Cort.) N. F.**

**English name:** Cotton Root Bark.

**Synonyms:** None.

**Botanical origin:** *Gossypium herbaceum* Linné, *Gossypium Barbadense* Linné, or *Gossypium arboreum* Linné. (Fam. *Malvaceæ*.)

**Part used:** Air-dried bark of the root.

**Impurities:** Not more than 5 per cent. of wood or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Virginia to Arkansas, south to Florida and Texas; also cultivated.

**Description:**

Cotton root bark occurs as a mixture of the tangled masses of bent and twisted pieces of bark. These pieces measure up to 6 cm. in length, to 1 cm. in width and to 1.5 mm. in thickness. The bark may be flat or partially quilled, and quilled. The outer surface is orange or reddish brown. This surface is rough, scaly and transversely fissured. The inner surface is yellowish brown, and it has many small black cylindrical oleoresin cavities and many detached masses of fibers. The bark is so very strong, tough and fibrous that it bends when pressure is applied. It, therefore, has no fracture. The odor is not characteristic. The taste is astrigent and acrid.

**Constituents:** Starch, glucose, gum, fixed oil, tannin, acid, resin, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Gossypii Corticis; Dose, 2 mils (30 min.).

## JUGLANS

1, Bark from a small root. 2, Lenticels on bark from an old root. 3, Cross-section of thin bark. 4, Dark outer part of the thick bark. 5, Light inner part of the thick bark. 6, Cut surface of bark.

## **JUGLANS (Juglan.) N. F.**

**English name:** Juglans.

**Synonyms:** Butternut Bark, White Walnut Bark.

**Botanical origin:** *Juglans cinerea* Linné. (Fam. Juglandaceæ.)

**Part used:** Dried inner bark of roots.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Eastern United States and Canada, south to Georgia and Arkansas.

### **Description:**

*Juglans* occurs as a mixture of the elongated cut and broken pieces. These pieces measure up to 40 cm. in width and to 10 mm. in thickness. The bark may be flat or partially quilled, and quilled. The outer surface varies from gray to brownish black. It is smooth in the thinner bark, rough in the thicker bark with detached pieces of cork, and has many rounded, elevated lenticels or transversely elongated depressed scars of lenticels. The inner surface is smooth and finely striated. The fracture is very strong, tough and incomplete. The fractured or cut surface is frequently layered. The outer layers are darker than the inner layer. The surface of the thinner barks is uniformly colored brownish black. The odor is slightly aromatic. The taste is slightly sweet, astringent and acrid.

**Constituents:** Fixed and volatile oils, resin, mucin, gum, tannin, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Juglandis; Dose, 4 mils (1 fl. dr.).

## **SASSAFRAS**

1. Large piece of bark showing corky layer. 2. Root scar.  
3. Large root scar. 4. Irregular pieces of the bark.

## SASSAFRAS (Sassafras) U. S. P.

**English name:** Sassafras.

**Synonyms:** Sassafras Bark, Ague Tree Bark.

**Botanical origin:** *Sassafras variifolium* (Salisbury)  
O. Kuntze. (Fam. Lauraceæ.)

**Part used:** Peeled bark of the root.

**Impurities:** Not more than 2 per cent. of adhering wood.

**Assay:** None given.

**Ash:** Not more than 30 per cent. —

**Habitat:** Maine to Michigan, south to Florida and Texas.

### Description:

Sassafras occurs as a mixture of the cut or broken pieces of the peeled root bark. These pieces or quills measure up to 14 cm. in length, to 8 cm. in width and to 5 mm. in thickness. The bark may be flat or partially quilled, and quilled. The outer surface of the peeled bark varies in color from orange to reddish brown. The unpeeled portions are light gray. It is rough, slightly scaly, and has one or more prominent root scars and remains of roots. The inner surface is, if uncut, finely striated; if cut, it is rough. The fracture is weak, brittle and even. The fractured or cut surface varies in color from light-yellow to reddish-brown, and it frequently has prominent groups of bast fibers. The odor is aromatic. The taste is astringent, pungent and mucilaginous.

**Constituents:** Volatile oil, tannin, starch, resin and sassafrid, etc.

**Dose:** 10 Gm. (2½ drachms).

### Preparations:

Fluidextractum Sarsaparillæ Compositum; Dose, 2 mils (30 min.).  
Oleum Sassafras; Dose, 0.2 mil (3 min.).

## **RUBUS**

1. A long, bent and twisted piece of bark. 2. Wood which is usually present. 3. Dark outer surface of the bark.

## RUBUS N. F.

**English name:** Rubus.

**Synonyms:** Blackberry Bark.

**Botanical origin:** *Rubus villosus* Aiton, *Rubus nigrobaccus* Bailey or *Rubus cuneifolius* Pursh. (Fam. Rosaceæ.)

**Part used:** Dried bark of the rhizome.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Europe, New England to Florida, west to Arkansas.

### Description:

*Rubus* occurs as a mixture of the broken pieces. These pieces measure up to 4 dm. in length, to 10 mm. in width and to 2 mm. in thickness. The bark is usually partially quilled, and quilled. The outer surface varies in color from gray to reddish brown. The surface without cork is light yellowish gray. It is longitudinally striated. The inner surface is long, finely striated and fissured. The color is light grayish yellow. The bark is so very strong, tough and fibrous that it bends instead of breaking when pressure is applied. Therefore it has no fracture. The odor is indistinct. The taste is slightly sweet and strongly astringent.

**Constituents:** Tannic acid, gallic acid, villosin (saponin), resin, volatile and fixed oils, wax, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Elixir Rubi Compositum; Dose, 15 mils (4 fl. drs.).  
Fluidextractum Rubi; Dose, 1 mil (15 min.).  
Syrupus Rubi; Dose, 4 mils (1 fl. dr.).

## **ASPIDOSPERMA**

1. Deeply fissured outer surface. 2. Irregularly and coarsely striated inner surface. 3. Dark reddish brown layer of the bark. 4. Light yellowish layer of the bark.

## **ASPIDOSPERMA (Aspidosp.) U. S. P.**

**English name:** Aspidosperma.

**Synonyms:** Quebracho Bark.

**Botanical origin:** *Aspidosperma Quebracho blanco*  
Schlechtendal. (Fam. *Apocynaceæ*.)

**Part used:** Bark.

**Impurities:** Not more than 2 per cent. wood or other  
foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Argentina, South America.

### **Description:**

Quebracho Bark occurs as broken pieces. These pieces measure up to 16 cm. in length, to 7 cm. in diameter, and to 37 mm. in thickness. The bark is flat or chip-like and partially quilled. The outer surface is rough, irregularly and deeply fissured and it varies in color from light gray to reddish brown. The inner surface is irregularly and coarsely striated, and its color varies from light yellow to yellowish brown. The bark is tough, fibrous and too tenacious to be fractured. The broken surface has an outer reddish brown corky layer and an inner light yellowish or reddish brown layer. Both the outer and inner layers are pitted. The odor is not distinct. The taste is strongly bitter and pungent.

**Constituents:** Tannin, sugars (quebrachit, inosit), alkaloids (aspidospermine, quebrachine, etc.), etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Aspidospermatis; Dose, 4 mils (1 fl. dr.).

## **CINCHONA**

1, Outer surface showing furrows, lichens and transverse flexures 2, Striated inner surface of the bark. 3, Cross-section of quilled bark. 4, Fragment of old root bark. 5, Outer surface of the root bark.

## CINCHONA (Cinch.) U. S. P.

**English name:** Cinchona.

**Synonyms:** Yellow Cinchona, Calisaya Bark, Yellow Peruvian Bark.

**Botanical origin:** *Cinchona Ledgeriana* Moens, *Cinchona Calisaya* Weddell, and hybrids of these with other species of *Cinchona*. (Fam. Rubiaceæ.)

**Part used:** Dried bark.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 5 per cent. of alkaloids.

**Ash:** None given.

**Habitat:** South America; cultivated extensively in Jamaica, Java and India.

### Description:

Cinchona occurs as a mixture of the long-cut pieces or broken fragments. These pieces measure up to 10.8 dm. in length and to 11 mm. in thickness. The bark is chip-like, partially quilled, quilled, overlapping quilled or compound quilled. The outer surface of the stem bark is rough, longitudinally furrowed and fissured, and transversely fissured, and the color varies from light gray to dark gray, with brownish black spots caused by lichens with apothecia or fruiting bodies. The root bark is rough, scaly, wrinkled and fissured, and the color is reddish brown. The inner surface is shortly and finely striated, and the color varies from a yellowish to a reddish brown. The fracture is tough and uneven. The fractured surface is granular in the outer portion, fibrous in the inner portion, and the color is brownish yellow. The odor is not characteristic. The taste is very bitter and astringent.

**Constituents:** Alkaloids (quinine, quinidine, cinchonine, cinchonidine, quinamine, etc.), acids, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

- Elixir Cinchonæ Alkaloidorum N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum et Ferri N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum et Hypophosphitum N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum, Ferri, Bismuthi et Strychninæ N. F.; Dose, 4 mils (1 fl. dr.).
- Elixir Cinchonæ Alkaloidorum, Ferri et Bismuthi N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum, Ferri et Calcii Lactophosphatis N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum, Ferri et Pepsini N. F.; Dose, 8 mils (2 fl. drs.).
- Elixir Cinchonæ Alkaloidorum, Ferri et Strychninæ N. F.; Dose, 4 mils (1 fl. dr.).
- Extractum Cinchonæ N. F.; Dose, 0.25 Gm. (4 grains).
- Fluidextractum Cinchonæ; Dose, 1 mil (15 min.).
- Infusum Cinchonæ N. F.; Dose, 50 mils (1  $\frac{1}{2}$  fl. ozs.).
- Tinctura Cinchonæ; Dose, 4 mils (1 fl. dr.).

## **CINCHONA RUBRA**

1, Outer surface of stem bark showing deep longitudinal furrows and numerous lichens. 2, Fissured and finely striated inner surface. 3, Cross-section of stem bark. 4, Outer surface of root bark. 5, Inner surface of root bark

## **CINCHONA RUBRA (Cinch. Rub.) U. S. P.**

**English name:** Red Cinchona.

**Synonyms:** Red Peruvian Bark.

**Botanical origin:** *Cinchona succirubra* Pavon, or its hybrids. (Fam. *Rubiaceæ*.)

**Part used:** Dried bark.

**Impurities:** None given officially.

**Assay:** Not less than 5 per cent. of alkaloids of red cinchona.

**Ash:** None given.

**Habitat:** South America, Ecuador.

### **Description:**

Red cinchona occurs as a mixture of cut and broken pieces. The pieces of stem bark measure up to 10.8 dm. in length, to 7 cm. in width and to 6 mm. in diameter. The root, which is nearly always chip-like, frequently measures up to 8 mm. in thickness. The bark is flat or chip-like, partially quilled, quilled, overlapping quilled or compound quilled. The outer surface of the stem bark is longitudinally furrowed, shallowly fissured transversely, or in the older barks deeply fissured transversely; and the color varies from light gray, when lichens are present, to grayish brown. The outer surface of the root bark is rough, wrinkled, and varies in color from a yellowish brown to brownish black. The inner surface of both the stem and root bark is finely striated and frequently fissured. The fracture is tough and uneven. The fractured surface is granular in the outer portion and fibrous in the inner portion. The color varies from yellowish to reddish brown. The odor is not distinct. The taste is strongly bitter and astringent.

**Constituents:** Alkaloids (quinine, quinidine, cinchonine, cinchonidine, quinamine, etc.), acids, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Cinchonæ Aquosum N. F.; Dose, 1 mil (15 min.).  
Tinctura Cinchonæ Composita; Dose, 4 mils (1 fl. dr.).

## **COCILLANA**

- 1, Longitudinal fissures and lichens on the outer surface.
- 2, Fibrous inner layer of the bark.
- 3, Fissured inner layer.
- 4, Cross-section of the bark.

## **COCILLANA (Cocillana.) N. F.**

**English name:** Cocillana.

**Synonyms:** Guapi Bark.

**Botanical origin:** *Guarea Rusbyi* (Britton) Rusby.  
(Fam. *Meliaceæ*.)

**Part used:** Dried bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not less than 10 per cent.

**Habitat:** Bolivia, South America.

### **Description:**

Cocillana Bark occurs as broken and cut pieces. These pieces measure up to 6.5 dm. in length, to 10 cm. in width and to 2 cm. in thickness. The bark is partially quilled or quilled. The outer surface is deeply fissured longitudinally and shallowly fissured transversely, and is usually covered with gray lichens. The color varies from light yellowish gray to grayish brown. The inner surface is finely striated longitudinally and is easily separable into fibrous layers. The color is brownish yellow. The fracture is strong, tough and incomplete if pressure is applied to the inner surface, but complete if pressure is applied to the outer surface. The fractured outer surface is granular, the inner is fibrous and the color is light yellow. The odor is not distinct. The taste is slightly sweet, astringent and pungent.

**Constituents:** Resins, fat, tannin, alkaloids (rusbyine), etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Cocillanæ; Dose, 1 mil (15 min.).

## **PARAOCOTO**

1, Outer surface of the bark. 2, Striated inner surface.

## **PARACOTO (Paracot.) N. F.**

**English name:** Paracoto.

**Synonyms:** None in common use.

**Botanical origin:** Unidentified tree indigenous to Northern Bolivia.

**Part used:** Dried bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Northern Bolivia and other parts of South America.

### **Description:**

Paracoto occurs as a mixture of the broken pieces of the bark. These pieces measure up to 7 cm. in width and to 15 mm. in thickness, and are of variable length. The bark is usually partially quilled. The *outer surface* is fissured and furrowed transversely, occasionally longitudinally, and the color is reddish brown. The *inner surface* is coarsely striated and reddish brown. The *fracture* is strong, tough and uneven. The *fractured surface* is granular in the outer portion and fibrous and porous in the inner portion. Both portions have numerous glistening resin cavities. The *color* is reddish brown. The *odor* is aromatic. The *taste* is pungent and pepper-like.

**Constituents:** Volatile oil, tannin, glucosides, resin, starch, etc.

**Dose:** 0.3 Gm. (5 grains).

### **Preparations:**

Fluidextractum Paracoto; Dose, 0.3 mil (5 min.).  
Tinctura Paracoto; Dose, 2 mils (30 min.).

## **PARACOTO**

1. Outer surface of the bark. 2. Striated inner surface.

## **PARACOTO (Paracot.) N. F.**

**English name:** Paracoto.

**Synonyms:** None in common use.

**Botanical origin:** Unidentified tree indigenous to Northern Bolivia.

**Part used:** Dried bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Northern Bolivia and other parts of South America.

### **Description:**

Paracoto occurs as a mixture of the broken pieces of the bark. These pieces measure up to 7 cm. in width and to 15 mm. in thickness, and are of variable length. The bark is usually partially quilled. The *outer surface* is fissured and furrowed transversely, occasionally longitudinally, and the color is reddish brown. The *inner surface* is coarsely striated and reddish brown. The *fracture* is strong, tough and uneven. The *fractured surface* is granular in the outer portion and fibrous and porous in the inner portion. Both portions have numerous glistening resin cavities. The *color* is reddish brown. The *odor* is aromatic. The *taste* is pungent and pepper-like.

**Constituents:** Volatile oil, tannin, glucosides, resin, starch, etc.

**Dose:** 0.3 Gm. (5 grains).

### **Preparations:**

Fluidextractum Paracoto; Dose, 0.3 mil (5 min.).  
Tinctura Paracoto; Dose, 2 mils (80 min.).

## **CONDURANGO**

**1.** A quill of thick root bark. **2.** Lenticel of the root bark.  
**3.** Stem bark with lichens. **4.** Granular and porous cross-section.

## **CONDURANGO (Conduran.) N. F.**

**English name:** Condurango.

**Synonyms:** Condurango Bark.

**Botanical origin:** *Marsdenia Condurango* (Triana)  
Reichenbach filius. (Fam. Asclepiadaceæ.)

**Part used:** Bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Ecuador and other parts of South America.

### **Description:**

Condurango occurs as broken pieces of the bark. Thin stem bark measures up to a meter in length. The thicker stem and root bark measure up to 16 cm. in length, to 3 cm. in width, and to 7 mm. in thickness. The bark is quilled and partially quilled. The outer surface of the stem bark is rough and has numerous lenticels, a few longitudinal fissures, and gray lichens. The color is greenish gray or grayish brown. The root bark is rough, with numerous rounded lenticels, and the color is yellowish or reddish brown. The inner surface of both the stem and root bark is finely striated longitudinally, and in color is light grayish or pinkish yellow. The fracture is tough and uneven. The fractured surface is granular and porous and has numerous long, tough, projecting bast fibers. The color is yellowish. The odor is slightly aromatic. The taste is slightly sweet, bitter and pungent.

**Constituents:** Starch, sugar, wax, resin, tannin, glucoside (condurangin), etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Condurango; Dose, 4 mils (1 fl. dr.).

## **GRANATUM**

1, Stem bark showing fissures, lenticels and numerous small black apothecia. 2, Inner surface of the stem bark. 3, Root bark showing scars caused by detached cork. 4, Inner surface of the root bark.

## **GRANATUM (Granat.) U. S. P.**

**English name:** Pomegranate.

**Synonyms:** Pomegranate Bark, Granatum Bark.

**Botanical origin:** *Punica Granatum* Linné. (Fam. *Punicaceæ*.)

**Part used:** Bark.

**Impurities:** Not more than 2 per cent. of wood, or foreign matter.

**Assay:** None given.

**Ash:** Not more than 16 per cent.

**Habitat:** Southwestern Asia and Southern Europe, Japan, China; cultivated in subtropics, also in Florida.

**Description:**

Granatum occurs as broken pieces. These pieces measure up to 14 cm. in length, to 4.5 cm. in width, and to 5 mm. in thickness. The bark is flat, and is quilled and partially quilled. The outer surface of the stem bark has shallow fissures, which are narrow in the thin pieces of bark, but broad in the thicker pieces. The fissured surface is yellowish and the unfissured surface is gray. This gray portion has numerous purplish apothecia. The root bark is rough and often has large scars where a portion of the cork has become detached. The color is yellow or greenish yellow. The inner surface of both the stem and root bark is smooth and finely striated, and it varies in color from yellow to greenish yellow. The fracture is brittle and even. The fractured surface is finely granular and grayish yellow. The odor is not distinct. The taste is astringent.

**Constituents:** Tannin, gallic acid, mannit, yellow coloring matter, alkaloids (pelletierine, isopelletierine, etc.), etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Granati; Dose, 2 mils (30 min.).

## **FRANGULA**

1. Outer surface showing indistinct lenticels and lichens.
2. Piece of bark with prominent lenticels.
3. Shiny, finely striated and split inner surface.
4. Cross-section of an overlapping quilled bark.

## **FRANGULA (Frang.) U. S. P.**

**English name:** Frangula.

**Synonyms:** Buckthorn Bark.

**Botanical origin:** *Rhamnus Frangula* Linné. (Fam. *Rhamnaceæ*.)

**Part used:** Bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Europe, Northern Asia and Northern Africa.

### **Description:**

Frangula occurs as a mixture of the cut and broken pieces. These pieces measure up to 5.5 dm. in length, but are usually shorter, to 4.7 cm. in width, and to 2 mm. in diameter, or rarely up to 3 mm. The bark is quilled and overlapping quilled, rarely multiple quilled. In each case the quills may be flattened. The outer surface has numerous rounded or transversely elongated gray lenticels and irregular patches of gray lichens. The color varies from light gray to purplish brown. The inner surface is smooth, finely striated and frequently split. The color varies from yellowish to purplish to reddish brown. The fracture is brittle. The fractured surface has many long, white, projecting groups of bast fibers in the outer portion. The inner portion is nearly smooth and has a few short projecting groups of bast fibers. The color varies from purple in the outer layer to yellow in the middle layer and yellowish brown in the inner layer. The odor is not distinct. The taste is slightly sweet and bitter.

**Constituents:** Frangulin (glucoside), resin, tannin, emodin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Elixir Catharticum Compositum N. F.; Dose, Aperient, 4 mils (1 fl. dr.); Cathartic, 12 mils (3 fl. drs.).  
Fluidextractum Frangulæ; Dose, 1 mil (15 min.).

## CANELLA

1. Outer surface of the transversely wrinkled bark with large lenticels. 2. Inner surface of the stem bark. 3. Overlapping quilled bark. 4. Cross-sections of an overlapping, partially quilled and flat piece of bark; the latter is distinctly layered.

## CANELLA (Canell.) N. F.

**English name:** Canella.

**Synonyms:** White Cinnamon, Wild Cinnamon.

**Botanical origin:** *Canella Winterana* (Linné) Gaertner. (Fam. *Canellaceæ*.)

**Part used:** Peeled bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** West Indies and Florida Keys.

### Description:

Canella occurs as a mixture of cut and broken pieces of the peeled bark. These pieces measure up to 1 m. in length, to 8.5 cm. in width, and to 1 cm. in thickness. The bark is partially quilled, quilled, and overlapping quilled. The outer surface varies in color from pinkish yellow to brownish orange; it is transversely wrinkled and occasionally cleft; it has numerous large lenticels with a light outer ring and a darker central portion. The inner surface is whitish yellow, non-striated and granular. The fracture is tough and uneven. The fractured surface is granular, yellowish white on the outer and inner surface, brownish between. The thicker bark is distinctly layered. The odor is aromatic. The taste is sweet, pungent and aromatic.

**Constituents:** Mannit, mucilage, resin, bitter extractive, starch, volatile oil, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Pulvis Aloes et Canellæ; Dose, 0.3 Gm. (5 grains).

## **VIBURNUM PRUNIPOLIUM**

1, Outer surface of the root bark. 2, Inner surface of the root bark. 3, Outer surface of thin stem bark showing prominent lenticels. 4, Fissured thick stem bark.

**VIBURNUM PRUNIFOLIUM (Viburn. Prun.)**  
**U. S. P.**

**English name:** Viburnum Prunifolium.

**Synonyms:** Black Haw.

**Botanical origin:** *Viburnum prunifolium* Linné and *Viburnum Lentago* Linné. (Fam, *Caprifoliaceæ*.)

**Part used:** Bark.

**Impurities:** Not more than 5 per cent. of wood or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Connecticut to Michigan, south to Georgia and Arkansas.

**Description:**

*Viburnum prunifolium* occurs as a mixture of broken and cut pieces. These pieces measure up to 15 cm. in length, to 2 cm. in width and to 3 mm. in thickness. The bark may be chip-like, partially quilled, and quilled. The outer surface of the stem bark varies in color from light gray to nearly black; the thin pieces are smooth and have brown lenticels; the thicker pieces are rough and fissured, and are without lenticels; the inner surface is yellowish brown and striated. The root bark varies in color from yellowish brown to black; it is smooth with elevated lenticels, or rough with projecting groups of bast fibers. The inner surface is yellowish brown and striated. The fracture of both barks is very weak, brittle and uneven. The fractured surface is grayish white and fibrous. The odor is aromatic. The taste is bitter, slightly pungent, and astringent.

**Constituents:** Starch, tannin, resin, glucoside (viburnin), valeric acid, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Elixir Viburni Prunifolii N. F.; Dose, 4 mils (1 fl. dr.).

Extractum Viburni Prunifolii; Dose, 0.5 Gm. (8 grains).

Fluidextractum Viburni Prunifolii; Dose, 2 mils (30 min.).

## **VIBURNUM OPULUS**

1, Outer surface of thick stem bark. 2, Inner surface of stem bark showing adhering wood. 3, Medium thick bark.  
4, Thin bark.

# VIBURNUM OPULUS (Viburn. Opul.) N. F.

**English name:** Viburnum Opulus.

**Synonyms:** Cramp Bark, High Bush Cranberry Bark.

**Botanical origin:** *Viburnum Opulus* Linné var. *Americanum* (Miller) Aiton. (Fam. *Caprifoliaceæ*.)

**Part used:** Bark.

**Impurities:** Not more than 5 per cent. of wood and other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Northern North America, south to New Jersey, west to Oregon.

## Description:

*Viburnum opulus* occurs as a mixture of broken and cut pieces. These pieces measure up to 30 cm. in length, to 3 cm. in width and to 3 mm. in diameter. The bark may be chip-like, partially quilled, and quilled. The outer surface of the thin pieces is yellowish gray; it frequently has short, shallow, longitudinal purple fissures and small brown lenticels. The thicker bark varies in color from grayish brown to purplish brown to brownish black; it has numerous shallow, longitudinal fissures and numerous brown lenticels. The inner surface varies from light greenish yellow to dark brown; it is finely striated longitudinally and fragments of wood are sometimes present. The fracture is very weak and brittle. The fractured surface is brown in the outer layer, yellow in the middle layer, and yellowish brown in the inner layer. The odor is aromatic, resembling valerianic acid. The taste is slightly astringent and bitter.

**Constituents:** Starch, tannin, resin, glucoside (viburnin), valeric acid, etc.

**Dose:** 2 Gm. (30 grains).

## Preparations:

Elixir Viburni Opuli Compositum; Dose, 4 mils (1 fl. dr.).

Fluidextractum Viburni Opuli; Dose, 2 mils (30 min.).

Tinctura Viburni Opuli Composita; Dose, 4 mils (1 fl. dr.).

## **MEZEREUM**

1, Outer surface showing prominent lenticels. 2, Inner smooth satin-like surface. 3, Small bundle formed by folding the bark lengthwise and tying with pieces of the bark.

## MEZEREUM (Mezer.) U. S. P.

**English name:** Mezereum.

**Synonyms:** Mezereon, Spurge Olive.

**Botanical origin:** *Daphne Mezereum* Linné, *Daphne Gnidium* Linné, or *Daphne Laureola* Linné.  
(Fam. *Thymelaeaceæ*.)

**Part used:** Bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe and Northern Asia.

### Description:

Mezereum occurs as long, cut pieces of the bark. These pieces measure up to 1.2 m. in length, to 2.5 cm. in width and to 1 mm. in thickness. The bark is partially quilled, quilled, and overlapping quilled, and is frequently arranged in a small bundle. The outer surface varies in color from yellowish brown to purplish gray; it is smooth or has short, longitudinal wrinkles and large scattered light-colored lenticels and buds. The inner surface varies in color from gray to yellowish gray to greenish gray; it is finely striated longitudinally and is shiny like satin. There is no fracture. The bark bends when pressure is applied. The cut surface shows fine, silky fibers. The odor is not distinct. The taste is pungent and acrid.

**Constituents:** Volatile oil, wax, acrid resin, coloring matter, bitter principle, etc.

### Dose:

### Preparations:

Fluidextractum Mezerei N. F. (Used externally.)  
Fluidextractum Sarsaparillæ Compositum; Dose, 2 mils (30 min.).

## **CASCARILLA**

1. Bark with the outer corky layer covered with lichens.
2. Piece of the bark with outer corky layer removed.
3. Small pieces of the bark.

## CASCARILLA (Cascarilla.) N. F.

**English name:** Cascarilla.

**Synonyms:** Sweetwood Bark, Sweet Bark.

**Botanical origin:** *Croton Eluteria* (Linné) Bennett.  
(Fam. *Euphorbiaceæ*.)

**Part used:** Bark.

**Impurities:** Not more than 5 per cent. of adhering wood.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Bahama Islands.

### Description:

Cascarilla bark occurs as a mixture of broken and cut pieces. These pieces measure up to 7.5 dm. in length, in small pieces usually up to 1 cm. in width and to 2 mm. in thickness. The bark is partially quilled and quilled. The outer surface is light gray except where the outer bark has been removed; then it varies in color from reddish brown to greenish brown. The thicker gray pieces are transversely fissured and longitudinally wrinkled; where the outer bark is removed the surface is smooth or slightly wrinkled. The inner surface varies from yellow to greenish brown; it is finely striated longitudinally. The fracture is very weak and brittle; that of the thinner bark is incomplete. The fractured surface is greenish brown and slightly radiate. The odor is pleasingly aromatic. The taste is pungent and bitter.

**Constituents:** Volatile oil, resin, fat, pectin, tannin, cascarillin, etc.

**Dose:** 2 Gm. (30 grains).

## **QUILLAJA**

1. Inner surface of the peeled bark. 2. Outer surface of the peeled bark with dark red patches of cork.

## QUILLAJA N. F.

**English name:** Quillaja.

**Synonyms:** Soap-tree Bark.

**Botanical origin:** *Quillaja Saponaria* Molina. (Fam. *Rosaceæ*.)

**Part used:** Peeled bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Chile to Peru.

### Description:

- *Quillaja* occurs as a mixture of cut and broken pieces of the peeled bark. These pieces measure up to 7.8 dm. in length, to 2.7 dm. in width and to 10 mm. in thickness. The bark is flat or slab-like and partially quilled. The *outer surface* varies from yellowish gray to purplish brown when cork patches are present; it is frequently fissured. The *inner surface* is yellowish gray; it is non-striated, granular, and nearly smooth, and has small nodular projections and circular depressions. The *fracture* is incomplete and very strong, tough and hackly. The *broken surface* is coarsely fibrous and yellowish white. The *odor* is not characteristic. The *taste* is acrid.

**Constituents:** Glucosides (quillajic acid, quillajasaponin), tannin, calcium oxalate and sulphate, etc.

**Dose:** Not used internally.

### Preparations:

Tinctura Quillajæ.



## **ULMUS U. S. P.**

**English name:** Elm.

**Synonym:** Elm Bark, Slippery Elm.

- **Botanical origin:** *Ulmus fulva* Michaux. (Fam. *Ulmaceæ*.)

**Part used:** Peeled bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Quebec to North Dakota, south to Florida and Texas.

### **Description:**

Elm bark *occurs* as a mixture of cut and broken pieces, or as cut and sawed pieces. These pieces measure up to 3 dm. in length, to 17 cm. in width and to 3 mm. in thickness. The sawed pieces are usually arranged in bundles, which measure up to 3 dm. in length, to 1.7 dm. in width and to 1.6 dm. in thickness. The bark is flat or slab-like and partially quilled. The *outer surface* varies in color from pinkish yellow to reddish brown, when cork patches are present; it has numerous partially detached bast fibers. The *inner surface* varies from brownish yellow to yellowish brown; it is coarsely striated longitudinally. The *fracture* is very strong, tough and incomplete. The *fractured surface* is very fibrous and of a light pinkish gray. The *odor* is distinct. The taste is sweet and mucilaginous.

**Constituents:** Gum, starch, tannin, etc.

**Dose:** None stated officially.

### **Preparations:**

Trochisci Ulmi N. F.; Dose, 1 troche.

## **FRAXINUS**

1, Coarsely striated inner surface. 2, Fissure of the partially peeled bark.

## **FRAXINUS (Fraxin.) N. F.**

**English name:** White Ash Bark.

**Synonyms:** White Ash, Cane Ash.

**Botanical origin:** *Fraxinus americana* Linné, and probably other species of *Fraxinus*. (Fam. Oleaceæ.)

**Part used:** Peeled bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Nova Scotia to Minnesota, south to Florida and Texas.

### **Description:**

White ash bark occurs as a mixture of cut and broken pieces. These pieces measure up to 4 dm. in length, to 7 cm. in width and to 7 mm. in thickness. The bark is flat or slab-like and partially quilled. The outer surface varies in color from gray brown where it is fissured, to yellowish brown where the cork has been removed. The inner surface is brownish yellow, smooth where completely removed from the tree or striated longitudinally when partially removed. The fracture is very strong, tough, and incomplete. The fractured surface is coarsely fibrous. The odor is very slightly aromatic. The taste is slightly pungent, bitter and acrid.

**Constituents:** Fraxin (glucoside), a bitter substance (fraxetin), tannin, mannit, volatile oil, gum, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Vinum Fraxini; Dose, 4 mils (1 fl. dr.).

## **PRUNUS VIRGINIANA**

**1.** Outer surface of the bark with adhering cork. **2.** Peeled bark with numerous white lenticels. **3.** Finely striated and fissured inner surface. **4.** Cross-section of stem bark.

## **PRUNUS VIRGINIANA (Prun. Virg.) U. S. P.**

**English name:** Wild Cherry.

**Synonyms:** Wild Cherry Bark, Black Cherry Bark.

**Botanical origin:** *Prunus serotina* Ehrhart (*Prunus virginiana* Miller). (Fam. Rosaceæ.)

**Part used:** Stem bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Ontario to North Dakota, south to Florida and Texas.

### **Description:**

Wild Cherry occurs as a mixture of cut and broken pieces, which may be peeled, partially peeled and unpeeled. These pieces measure up to 30 cm. in length, to 5 cm. in width and to 4 mm. in thickness. The bark is chip-like or partially quilled. The outer surface, if unpeeled, is brownish black; it has numerous transversely elongated brown lenticels; if the outer surface is peeled it is brownish green and brown; it has numerous transversely elongated grayish white lenticel scars. The inner surface varies from yellowish brown to reddish brown; it is finely striated and fissured. The fracture is weak, brittle and uneven. The fractured surface is yellowish and reddish brown, granular and slightly fibrous. The odor is aromatic, bitter-almond-like when moistened. The taste is astringent and pungent.

**Constituents:** Amygdalin (glucoside), ferment (emulsin), bitter principle, resin, tannin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Pruni Virginianæ N. F.; Dose, 2 mils (30 min.)

Infusum Pruni Virginianæ N. F.; Dose, 60 mils (2 fl. ozs.).

Syrupus Pruni Virginianæ; Dose, 4 mils (1 fl. dr.).

Vinum Pruni Virginianæ N. F.; Dose, 4 mils (1 fl. dr.).

## **CASCARA SAGRADA**

**1.** Hepatic attached to the outer surface. **2.** Surface covered with lichens. **3.** Fruiting lichens. **4.** Cross-section of a double quill. **5.** Cross-section of a partially quilled bark. **6.** Overlapping quilled bark.

# CASCARA SAGRADA (Casc. Sagr.) U. S. P.

**English name:** Cascara Sagrada.

**Synonyms:** Cascara Bark, Chittem Bark.

**Botanical origin:** *Rhamnus Purshiana* de Candolle.  
(Fam. *Rhamnaceæ*.)

**Part used:** Bark of the trunk and branches.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Northwestern United States, south to Northern California and Idaho.

## Description:

Cascara Sagrada occurs as cut pieces or entire and broken pieces. These pieces measure up to 6 dm. in length, to 8.5 cm. in width and to 6 mm. in thickness. The bark is chip-like, partially quilled, quilled, and overlapping quilled. The outer surface varies in color from purple to grayish purple to light gray. The surface of the thin bark has prominent transverse lenticels; the thicker bark, a few broad lenticels with apothecia; still thicker pieces have longitudinal fissures and attached moss or hepatic plants. The inner surface varies in color from yellowish to reddish to purplish brown; it is smooth and non-striated. The fracture is brittle and uneven. The fractured surface is brownish yellow, granular and fibrous. The odor is slight. The taste is slightly sweet and bitter.

**Constituents:** Resins, emodin, cascarin, frangulin, tannin, fixed and volatile oils, etc.

**Dose:** 1 Gm. (15 grains).

## Preparations:

Elixir Cascaræ Sagradæ N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Cascaræ Sagradæ Compositum N. F.; Dose, 4 mils (1 fl. dr.).

Extractum Cascaræ Sagradæ; Dose, 0.25 Gm. (4 grains).

Fluidextractum Cascaræ Sagradæ; Dose, 1 mil (15 min.).

Fluidextractum Cascaræ Sagradæ Aromaticum; Dose, 2 mils (30 min.).

Fluidglyceratum Cascaræ Sagradæ N. F.; Dose, 1 mil (15 min.).

Fluidglyceratum Cascaræ Sagradæ Aromaticum N. F.; Dose, 1 mil (15 min.).

## **CINNAMOMUM SAIGONICUM**

1, Bark from a small branch. 2, Outer surface of medium thick bark 3, Inner surface of the bark. 4, Outer and inner surface of a thicker bark.

**CINNAMOMUM SAIGONICUM** (Cinnam. Saigon.)  
U. S. P.

**English name:** Saigon Cinnamon.

**Synonyms:** Annam Cinnamon.

**Botanical origin:** An undetermined species of *Cinnamomum*. (Fam. *Lauraceæ*.)

**Part used:** Bark.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2 per cent. of volatile extractive, soluble in ether.

**Ash:** Not more than 6 per cent. The amount of ash insoluble in diluted hydrochloric acid does not exceed 2 per cent. of the weight of Saigon Cinnamon taken.

**Habitat:** China.

**Description:**

Saigon Cinnamon occurs as a mixture of long, cut and broken pieces. These pieces measure up to 2.9 dm. in length, to 3.8 mm. in width and to 5 mm. in thickness; they are usually arranged in bundles which measure up to 2.9 dm. in length and to 18 cm. in width. Each bundle is held together with three strands of bamboo, and a bamboo stick on which are Chinese characters occurs in each bundle. The bark is quilled and overlapping quilled. The outer surface of the thin bark is dark purplish brown; it is longitudinally striated and has portions of branches or branch scars; that of the thicker bark varies in color from brown to grayish brown; the surface is rough and wrinkled and has branch scars. The inner surface varies in color from light yellowish to reddish brown; it is very finely striated and granular. The fracture of the thin pieces is very weak and brittle; that of the thicker pieces, brittle. The fractured surface has a dark brown outer and inner layer and a light yellowish brown central layer. The thicker pieces are granular and have numerous masses of white bast fibers. The odor is aromatic. The taste is very sweet, aromatic and pungent.

**Constituents:** Volatile oil, mucilage, resin, sugar, tannin, cinnamic aldehyde, etc.

**Dose:** 0.25 Gm. (4 grains).

**Preparations:**

Fluidextractum Aromaticum; Dose, 1 mil (15 min.).

Pulvis Aromaticus; Dose, 1 Gm. (15 grains).

Pulvis Cretæ Aromaticus N. F.; Dose, 2 Gm. (30 grains).

Syrupus Cinnamomi N. F.; Dose, 4 mils (1 fl. dr.).

Tinctura Aromatica N. F.; Dose, 2 mils (30 min.).

Tinctura Cinnamomi; Dose, 2 mils (30 min.).

## **XANTHOXYLUM—SOUTHERN PRICKLY ASH**

1, Outer surface showing wide shallow fissures and gray lichens. 2, Peeled bark. 3, Corky wart surmounted by a spine, and just beneath is a piece of bark with a cluster of warts.

# **XANTHOXYLUM (Xanthox.) U. S. P.**

## **(1) Southern Prickly Ash**

**English name:** Xanthoxylum.

**Synonyms:** Southern Prickly-ash Bark, Pepper Wood.

**Botanical origin:** *Xanthoxylum Clava-Herculis* Linné.  
(Fam. *Rutaceæ*.)

**Part used:** Bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Virginia to Arkansas, south to Florida and Texas.

### **Description:**

Southern Prickly-ash Bark occurs as a mixture of cut and broken pieces. These pieces measure up to 20 cm. in length, to 6 cm. in width and to 3 mm. in thickness. The bark is chip-like, or partially quilled and quilled. The outer surface is usually covered with gray lichens and shallow transverse fissures and yellow lenticels. The peeled outer bark is greenish or yellowish brown and smooth. Many of the pieces of the bark have solitary or clustered wart-like elevations of cork, frequently surmounted by a small spine. The inner surface varies in color from yellowish green to greenish brown, and it glistens with many small crystals. The fracture is brittle. The fractured surface varies in color from yellowish to dark brown; it is finely radiate and has numerous yellowish brown oil cavities and glistening crystals. The odor is not characteristic. The taste is bitter, acrid and pungent.

**Constituents:** Volatile oil, fat, sugar, tannin, acrid resin, alkaloid (xanthoxyline), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Xanthoxyli; Dose, 2 mils (30 min.).

## **XANTHOXYLUM—NORTHERN PRICKLY ASH**

1. Scaly inner surface of the bark. 2. Partially peeled bark. 3. Spine attached to the outer surface. 4. Bark showing a fragment of attached wood.

## **XANTHOXYLUM (Xanthox.) U. S. P.**

### **(2) Northern Prickly Ash**

**English name:** Xanthoxylum.

**Synonyms:** Northern Prickly-ash Bark, Toothache Tree.

**Botanical origin:** *Xanthoxylum americanum* Miller.  
(Fam. *Rutaceæ*.)

**Part used:** Bark.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Quebec to Minnesota, south to Georgia and Nebraska.

#### **Description:**

Northern prickly-ash bark occurs as a mixture of cut and broken pieces. These pieces measure up to 15.5 cm. in length, to 22 mm. in width and to 3 mm. in thickness. The bark is chip-like and partially quilled. The outer surface varies in color from gray to grayish black; it is slightly striated longitudinally and furrowed, and has an occasional bud stem scar and spines. The inner surface is gray and yellowish white; it is finely striated longitudinally, and it has great numbers of minute oleoresin cavities with resin. Occasionally the surface is scaly. The fracture is weak, brittle and uneven. The fractured surface is nearly black in the outermost layer, yellowish in the middle layer, and yellowish brown and radiate in the inner layer. The entire surface has minute oleoresin cavities. The odor is not characteristic. The taste is bitter, acrid and strongly pungent.

**Constituents:** Volatile oil, fat, sugar, tannin, acrid resin, alkaloid (xanthoxyline), etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Xanthoxyli; Dose, 2 mils (30 min.).

## **QUERCUS**

**1.** Piece of wood attached to the inner surface. **2.** Longitudinal striations. **3.** Outer surface of the peeled bark showing the fibrous ends.

## **QUERCUS (Querc.) N. F.**

**English name:** Quercus.

**Synonyms:** White Oak Bark.

**Botanical origin:** *Quercus alba* Linné. (Fam. *Fagaceæ*.)

**Part used:** Peeled bark of the trunk and branches.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Maine to Minnesota, south to Florida and Texas.

### **Description:**

*Quercus* occurs as a mixture of cut and broken pieces. These pieces measure up to 4 dm. in length, to 7 cm. in width and to 8 mm. in thickness. The bark is flat, slab-like or partially quilled. The *outer surface* varies in color from light brown to dark brown; it is striated and has numerous partially detached groups of bast fibers. The *inner surface* is dark brown and striated longitudinally; the striated portion is often porous. The *fracture* is strong, tough and incomplete. The *fractured surface* is dark brown and coarsely fibrous. The *odor* is not characteristic. The *taste* is strongly astringent.

**Constituents:** Quercitannic and gallic acids, oak-red, pectin, resin, fat, bitter principle, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Quercus; Dose, 1 mil (15 min.).

## **PINUS ALBA**

1, Corrugated inner surface of the bark. 2, Striated outer surface with numerous round oleoresin cavities with resins.

## **PINUS ALBA (Pinus Alb.) N. F.**

**English name:** White Pine Bark.

**Synonyms:** Northern Pine, Spruce Pine.

**Botanical origin:** *Pinus Strobus* Linné. (Fam. *Piniaceæ*.)

**Part used:** Peeled bark.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Newfoundland to Manitoba, south to New Jersey and Iowa.

### **Description:**

White Pine Bark occurs as a mixture of cut and broken pieces of the peeled bark. These pieces measure up to 8 dm. in length, to 4 dm. in width and to 3 mm. in thickness. The bark is flat and frequently folded several times lengthwise. The *outer surface* varies in color from pinkish yellow to brown; it is coarsely striated and has numerous oleoresin cavities with resin. The surface frequently has patches of brown or gray cork tissue. The *inner surface* is yellowish brown, finely striated, smooth, and corrugated. The *fracture* is strong, tough and incomplete. The *fractured surface* is light yellow and fibrous. The *odor* is not distinct. The *taste* is slightly sweet, bitter and astringent.

**Constituents:** Volatile oil, tannin, gum, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Syrupus Pini Strobi Compositus; Dose, 4 mils (1 fl. dr.).  
Syrupus Pini Strobi Compositus cum Morphina; Dose, 2 mils (30 min.).



### CINNAMOMUM ZEYLANICUM

1, Outer surface of a large quill. 2, Oblique section of a multiple overlapping quill. 3, Cross-section of a quill.

**CINNAMOMUM ZEYLANICUM (Cinnam. Zeylan.)**  
**U. S. P.**

**English name:** Ceylon Cinnamon.

**Synonyms:** True Cinnamon.

**Botanical origin:** *Cinnamomum Zeylanicum* Breyne.  
(Fam. *Lauraceæ*.)

**Part used:** Peeled bark.

**Impurities:** Not more than 3 per cent. of the outer bark or other foreign matter.

**Assay:** Not less than 0.5 per cent. of volatile extractive, soluble in ether.

**Ash:** Not more than 6 per cent. The amount of ash insoluble in hydrochloric acid does not exceed 2 per cent. of the weight of Ceylon Cinnamon taken.

**Habitat:** Island of Ceylon.

**Description:**

Ceylon Cinnamon occurs as cut, rarely as broken, pieces of the peeled bark. These pieces measure up to 1.2 m. in length, to 18 mm. in width, and to 1.5 mm. in thickness. The bark is multiple overlapping quilled; frequently there are fifteen individual pieces of bark in a quill. The *outer surface* is yellowish brown; it is striated and smooth and occasionally has branch scars. The *inner surface* is dark yellowish brown; it is finely striated and either smooth or rough. The *fracture* is very weak, brittle and uneven. The *fractured surface* is fibrous. The *odor* is aromatic. The *taste* is slightly sweet, pungent and slightly astringent.

**Constituents:** Volatile oil, mucilage, resin, sugar, tannin, cinnamic aldehyde, etc.

**Dose:** 0.25 Gm. (4 grains).

**Preparations:**

None.

Ceylon Cinnamon, 40-inch quills, in bundle 18 inches in diameter, tied with 5 bands of rope and with an outer covering of burlap.

## CHAPTER VI

### WOODS AND PITH

**I**N the study of woods the following must be considered: Occurrence, size, nature, texture, color, surface, fracture, odor and taste.

**1. Occurrence.** Woods occur as cut, as sawed, or as bored pieces.

**2. Size.** The size of the pieces of the different woods is variable and not diagnostic.

**3. Nature.** Logwood is frequently in the form of logs; guaiac, in the form of borings; quassia, in the form of shavings or chips or cubes (sawed).

**4. Texture.** The texture of all the woods is fibrous; guaiac is resinous and fibrous.

**5. Color.** The woods vary greatly in color. The sap wood of quassia is gray; the heart wood, yellow; santalum album varies from yellow to reddish brown; santalum rubrum is brownish red.

**6. Surface.** The surface of all the woods is splintery.

**7. Fracture.** The fracture is in all cases hackly.

**8. Odor.** The only odorous wood is white sandal-wood, which is aromatic; the other woods have no characteristic odor.

**9. Taste.** Quassia is strongly bitter; white sandal-wood is pungent; guaiac wood is acrid and pungent; logwood is astringent.

### PITH

Sassafras pith is the only one official. In studying piths one should keep in mind the characters given under *woods*.

## **QUASSIA**

**1. Cubes of the wood. 2. Chips. 3. Shavings.**

## QUASSIA (Quass.) U. S. P.

**English name:** Quassia.

**Synonyms:** Bitter Wood, Jamaica Quassia, Surinam Quassia.

**Botanical origin:** *Picrasma excelsa* (Swartz) Planchon or *Quassia amara* Linné. (Fam. *Simarubaceæ*.)

**Part used:** Wood.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** West Indies.

### Description:

Quassia occurs as the sawed or cut pieces of the wood. These pieces are of variable size. The wood may be in the form of shavings, small chips, or sawed into cubes. The outer and inner surfaces of the sap-wood are gray; of the heart-wood light or dark yellow and slightly porous. The fracture of the larger pieces is very strong, tough and hackly. The fractured surface varies in color from gray to dark yellow; it is porous and fibrous. The odor is not characteristic. The taste is very strong and persistently bitter.

**Constituents:** Bitter principles, alkaloids, resin, pectin, mucilage, etc.

**Dose:** 0.5 Gm. (8 grains).

### Preparations:

Extractum Quassiae N. F.; Dose, 0.06 Gm. (1 grain).  
Fluidextractum Quassiae N. F.; Dose, 0.5 mil (8 min.).  
Tinctura Quassiae; Dose, 2 mils (30 min.).

## **SANTALUM ALBUM**

1, Fragment of the wood showing the splintery ends. 2.  
Small fragment. 3, Fragment showing light patches of  
medullary rays.

## **SANTALUM ALBUM (Santal. Alb.) N. F.**

### **(1) White Sandal Wood**

**English name:** Sandal Wood.

**Synonyms:** White Sandal Wood, Yellow Sandal Wood.

**Botanical origin:** *Santalum album* Linné. (Fam. *Santalaceæ*.)

**Part used:** Heart-wood.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Southern India.

#### **Description:**

White Sandal Wood occurs as small logs or billets and as cut and broken pieces. The billets and pieces are of variable length and diameter. The texture is fibrous. The color varies from light yellowish to dark reddish brown. The cut surface has ax marks; it is smooth and dark yellowish brown. The uncut surface is rough and furrowed, or it has dark bands of medullary-rays alternating with the lighter wood. The fracture of the smaller pieces is very strong, tough and hackly. The fractured surface is similar to the surface. The odor is pleasingly aromatic. The taste is slightly sweet and pungent.

**Constituents:** Volatile oil, resin, tannin, etc.

**Dose:** Used only in the form of its preparations.

#### **Preparations:**

Oleum Santali U. S. P.; Dose, 0.5 mil (8 min.).

Tinctura Sabal et Santali N. F.; Dose, 4 mils (1 fl. dr.).

**SANTALUM RUBRUM**

1, A mass of granulated wood of variable size.

## **SANTALUM RUBRUM (Santal. Rub.) U. S. P.**

### **(2) Red Sandal Wood**

**English name:** Red Sandal Wood.

**Synonyms:** Red Saunders, Ruby Wood.

**Botanical origin:** *Pterocarpus santalinus* Linné filius.  
(Fam. Leguminosæ.)

**Part used:** Heart-wood.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** East Indies.

#### **Description:**

Red Sandal Wood occurs usually as a mixture of fine and coarse powder. The largest pieces are usually less than a millimeter in length. The texture is fibrous. The color is bright brownish red. The surface is rough. The fracture and the fractured surface cannot be observed on account of the fineness of the powder. The odor is not distinct. The taste is slightly astringent.

**Constituents:** Red coloring matter, pterocarpin, resin, tannin, etc.

**Dose:** None given.

#### **Preparations:**

Enters into Tinctura Lavandulae Composita; Dose, 2 mils (30 min.).

EXHIBITS AND EVIDENCE

1. Mass of chips showing white nonofficial pieces. 2. Portion of a boring from a bowling ball. 3. Projecting fibers of the wood.

## **GUAIACI LIGNUM (Guaiac. Lig.) N. F.**

**English name:** Guaiac Wood.

**Synonyms:** Lignum Vitæ, Lignum Sanctum.

**Botanical origin:** *Guaiacum officinale* Linné or *Guaiacum sanctum* Linné. (Fam. *Zygophyllaceæ*.)

**Part used:** Heart-wood.

**Impurities:** None given officially.

**Assay:** Yields not less than 15 per cent. extractive to alcohol.

**Ash:** Not more than 3 per cent.

**Habitat:** West Indies.

### **Description:**

Guaiac wood occurs as a mixture of chips, shavings, cuttings and trimmings. Most of the drug is obtained as a by-product in the manufacture of bowling balls. The size of the pieces is very variable. The texture is fibrous. The color varies from greenish brown to reddish brown. The pieces of sap-wood are light yellow in color, and few of these should be present because they do not contain so much resin as the dark green heart-wood. The surface is powdery, rough and irregularly furrowed. The fracture of the smaller pieces is very strong, tough and hackly. The fractured surface is splintery. The odor is not characteristic. The taste is not distinct at first, but upon prolonged chewing it is acrid and pungent.

**Constituents:** Resin, cellulose, vasculose, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

*Guaiacum* (Guaiac Resin), U. S. P.; Dose, 1 Gm. (15 grains).

## **HÆMATOXYLON**

1, Pieces of worthless fermented wood. 2 and 3, Pieces of unfermented wood.

## **HÆMATOXYLON (Hæmatox.) N. F.**

**English name:** Hematoxylon.

**Synonyms:** Logwood.

**Botanical origin:** *Hæmatoxylon campechianum* Linné.  
(Fam. Leguminosæ.)

**Part used:** Unfermented heart-wood.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3.5 per cent.

**Habitat:** Central America and West Indies.

and as cut and broken pieces. The  
is size. The texture is fibrous. The  
reddish brown, of the cut or broken  
longitudinally striated and slightly  
smaller pieces is very strong, tough  
surface is splintery and yellowish red.  
is frequently supplied as the official  
n and of an iridescent green color.  
ie. The taste is slightly sweet and  
astringent.

**Constituents:** Volatile oil, tannin, resin, hematoxylin,  
etc.

**Dose:** None given.

**Preparations:**

Extractum Hæmatoxyl; Dose, 1 Gm. (15 grains).

## **SASSAFRAS MEDULLA**

**1.** Straight piece of pith. **2.** Mass of irregular pieces. **3.** Curved pieces of pith.

## **SASSAFRAS MEDULLA (Sassaf. Med.) N. F.**

**English name:** Sassafras Pith.

**Synonyms:** Ague-tree Pith.

**Botanical origin:** *Sassafras variifolium* (Salisbury)  
O. Kuntz. (Fam. Lauraceæ.)

**Part used:** Dried pith.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Maine to Michigan, south to Florida and Texas.

### **Description:**

Sassafras pith occurs as a mixture of broken and cut pieces. These pieces measure up to 15 cm. in length and to 6 mm. in diameter. The texture is non-fibrous and parenchymatic. The color varies from white to yellowish brown. The surface is striated and is split or cleft on the outer edge. The fracture is very weak and brittle, or it may be pliable. The fractured surface is yellowish white and porous. The odor is slight. The taste is mucilaginous.

**Constituents:** Gum, volatile oil, etc.

### **Preparations:**

Mucilago Sassafras Medullæ; Dose, 15 mils (4 fl. drs.).

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## **CARBO LIGNI (Carbo Lig.) U. S. P.**

**English name:** Wood Charcoal.

**Synonyms:** Charcoal, Soft-wood Charcoal.

**Botanical Origin:** Variable.

**Part used:** Charred wood.

### **Impurities:**

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Variable, according to the source of the wood.

### **Description:**

Dull black, fine powder, which should not be gritty and which adheres to the fingers when touched; odor and taste not characteristic.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Trochisci Carbonis Ligni N. F.; Dose, 1 troche.

## CHAPTER VII

### STEMS

**I**N the study of stems the following must be considered: Occurrence, size, nature, nodes, internodes, texture, color, surface, fracture, outline, cortex, wood and pith.

1. **Occurrence.** Cactus and dulcamara occur as cut stems, arbor-vitæ as broken branches, scoparius as cut and broken branches.

2. **Size.** Cactus has a maximum diameter of 3 cm.; the smaller branches of scoparius are less than 1 mm. in diameter.

3. **Nature.** Cactus and dulcamara are simple (non-branched), scoparius and thuja are branched. In scoparius the branches are alternate.

4. **Nodes.** The nodes are usually enlarged and a variable distance apart. They are diagnostic.

5. **Internodes.** The internodes are very variable in length. In the older branches they are usually farther apart than in the younger branches.

6. **Texture.** The texture of cactus stem is succulent (non-fibrous), all the other stems are fibrous.

7. **Color.** The color of cactus is dark-green, of scoparius greenish brown; of thuja the color varies from dark green to reddish brown. Bittersweet is greenish brown.

8. **Surface.** The surface of cactus is spiny and channeled; of scoparius winged, of thuja covered with four rows of leaves; of bittersweet striated.

9. **Fracture.** The fracture of thuja, scoparius and bittersweet is uneven. Cactus grandiflorus bends, therefore it has no fracture.

**10. Outline.** The outline of *cactus grandiflorus* is wavy; of *scoparius* usually five-angled, of *thuja* irregular, of *bittersweet* cylindrical.

**11, 12, 13. Cortex, Wood and Pith.** The cortex of *cactus grandiflorus* is very thick and non-fibrous. The cortex in *thuja*, *scoparius* and *bittersweet* is thin and the wood is rather thick. In *bittersweet* the pith is hollow.

## **CACTUS GRANDIFLORUS**

1, Central wood portion of a longitudinal section. 2, Thick mucilaginous cortex. 3, Ridges of a young stem. 4, Spines of the outer surface. 5, Circular wood portion. 6, Cross-section of a young stem.

# CACTUS GRANDIFLORUS (Cact. Grand.) N. F.

**English name:** Cactus Grandiflorus.

**Synonyms:** Night-blooming Cereus, Sweet-scented Cactus.

**Botanical origin:** *Cactus grandiflorus* Linné [*Cereus grandiflorus* Miller]. (Fam. *Cactaceæ*.)

**Part used:** Fresh succulent stems.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** West Indies, Porto Rico and Mexico.

## Description:

*Cactus Grandiflorus* occurs as long pieces several meters in length, or as pieces of variable length, contained in a bottle, etc., and covered with alcohol. The maximum diameter of the stem is 3 cm. The stems are simple or rarely branched (when cut). The nodes are not distinct. The texture of the cortex is mucilaginous; of the central cylinder fibrous. The color is dark green. The surface is deeply channeled longitudinally. The ridges have clusters of spines 6 mm. in length and occasionally tough branched roots. The outline is from 5 to 9 angled. The cortex is mucilaginous; the wood fibrous; the pith hollow. The odor is slightly aromatic. The taste is mucilaginous, sweet and bitter.

**Constituents:** Alkaloid (cactine), glucoside, resin, fat, etc.

**Dose:** None given.

## Preparations:

Tinctura Cacti Grandiflori; Dose, 1 mil (15 min.).

## **SCOPARIUS**

1, Stem showing the two wings ending in a node. 2, A large flower and a flower bud. 3, The hairy phial. 4, Fruit. 5, Three foliate leaves.

## **SCOPARIUS (Scopar.) N. F.**

**English name:** Scoparius.

**Synonyms:** Broom Tops.

**Botanical origin:** *Cytisus scoparius* (Linné) Link.  
(Fam. Leguminosæ.)

**Part used:** Dried tops.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Asia and Europe.

### **Description:**

Scoparius occurs as a mixture of cut and broken pieces of the tops. The pieces measure up to 9 dm. in length. The stems are branched and alternate. The branches curve upward parallel to the main stem. The nodes have small leaf scars and prominent buds. The internodes are of variable length and five-winged, the elevations beginning and ending in nodes. The texture is fibrous. The color of the small twigs is dark green, of the thicker twigs reddish brown. The surface is wrinkled or striated transversely. The fracture is tough. The outline is five-angled. The cortex is thin. The wood is yellowish. The pith is small. Occasionally a few leaves, flowers and fruits are present. The leaves are three-foliate. The petiole of the leaflets is long. The base is cuneate or acute. The margin is entire. The apex is mucronate. The outline is obovate or elliptical. The upper and under surface is ciliate. The odor is not distinct. The taste is disagreeably bitter.

**Constituents:** Sparteine (alkaloid), scoparin (glucoside), tannin, volatile oil, fat, sugar, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Scoparii; Dose, 1 mil (15 min.).

## **THUJA**

1, A typical leafy twig. 2, Small twig showing three of  
the four rows of leaves 3, Fruit attached to a young twig.  
4, Seed

## THUJA (Thu.) N. F.

**English name:** Thuja.

**Synonyms:** Arbor Vitæ, White Cedar.

**Botanical origin:** *Thuja occidentalis* Linné. (Fam. *Pinaceæ*.)

**Part used:** Leafy young twigs.

**Impurities:** Not more than 1 per cent. of foreign substances.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** New Brunswick to Manitoba, south to North Carolina and Tennessee.

### Description:

*Thuja* occurs as a mixture of broken pieces of leaves and twigs. The pieces measure up to 15 cm. in length. The leaves measure up to 5 mm. in diameter and to 4 mm. in width. The stems are branched. The nodes are not discernible. The leaves, which are arranged in four rows, are scale-like. The two lateral rows are keeled, and they partially overlap the two rows of flat leaves. All four rows are acute at the apex. The two rows of flat leaves have a large gland near the apex. The two rows of keel-shaped leaves have indistinct glands. The internodes are variable in length. The texture of the stem is fibrous. The color varies from dark green to yellowish brown. The fracture is fibrous. The outline of the twigs and leaves is irregular. The cortex is thin. The wood is finely fibrous. The odor is aromatic. The taste is terebinthinate (like turpentine) and bitter.

**Constituents:** Volatile oil, resins, wax, tannin, glucosides (pinipicrin, thujin), etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Fluidextractum Thujæ; Dose, 2 mils (30 min.).

## **DULCAMARA**

1, Mass of cut pieces. 2, Pith of the stem. 3, Thick wood.

## DULCAMARA (Dulcam.) N. F.

**English name:** Bittersweet.

**Synonyms:** Woody Nightshade, Poison Berry, Wolf Grape.

**Botanical origin:** *Solanum Dulcamara* Linné. (Fam. *Solanaceæ*.)

**Part used:** Dried stems and branches.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Europe; naturalized in North America, New Brunswick to Minnesota, south to Georgia and Kansas.

### Description:

Bittersweet occurs as a mixture of short, oblique and transverse sections. These pieces measure up to 1 cm. in length and to 7 mm. in diameter. The entire stems are branched. The nodes are slightly enlarged. The leaf buds are alternate. The internodes are not distinct. The texture is fibrous. The color varies from yellow to greenish brown. The surface is striated longitudinally. The fracture is brittle and uneven. The outline is cylindrical. The cortex is thin and dark greenish brown in color. The wood varies in color from gray to greenish brown. The pith is brown and hollow or solid. The odor is not distinct. The taste is bitter and sweet.

**Constituents:** Glucoside (dulcamarin), alkaloid (solanine), gum, wax, resin, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Dulcamarae; Dose, 4 mils (1 fl. dr.).

**Euphorbia Pilulifera, 100 lbs. In mats, covered with light burlap.**

## CHAPTER VIII

### PLANTS

**I**N the study of plants the following must be considered: (1) Leaves, (2) stems, (3) flowers, and (4) fruits.

#### LEAVES

In considering leaves, note carefully their occurrence; petiole, length, width, and nature; blade, base, margin, apex, outline, size, upper surface, under surface, texture, odor, and taste.

**1. Occurrence.** Leaves occur in a broken or entire condition.

#### PETIOLE

**2.** The petiole of euphorbia is very short; of coptis and drosera, very long.

#### BLADE

**3. Base.** The base of euphorbia and scutellaria is rounded; of the lobes of coptis, cuneate; of drosera, slenderly tapering.

**4. Margin.** The margin of the leaves of chirata and the droseras is entire. The margin of euphorbia is serrate. In coptis the margin is crenate.

**5. Apex.** The apex of drosera rotundifolia is rounded; of chirata, scutellaria, and euphorbia, acute.

**6. Outline.** The outline of drosera longifolia is oblong-spatulate; of drosera intermedia, spatulate; of drosera rotundifolia, orbicular; of chirata, oblong-spatulate; of scutellaria, ovate-lanceolate; of chirata, oblong-ovate.

**7. Size.** Varies greatly in the different leaves.

**8. Upper Surface.** A study of the upper surface includes the color, markings, and veins.

The color usually is dark green. The markings and the veins are not diagnostic.

**Under Surface.** The under surface is light gray or hairy except in euphorbia. The markings are characteristic, and the veins are elevated prominently, as in scutellaria.

**Texture.** The texture is thin and papery, and leaves are brittle.

**Odor.** The leaves of the plants have no characteristic odor.

**Taste.** The taste of chirata is very strongly that of drosera, coptis, and euphorbia, less so; of llaria, only very slightly bitter. Euphorbia and roseras also have a slightly acrid taste.

## STEMS

In the study of stems the following must be considered:

**Occurrence, size, nature, nodes, internodes, re, color, surface, fracture, outline, cortex, wood, pith.**

**Occurrence.** Most stems occur in a broken condition.

**Size.** The size of the different stems is extremely variable, but for each there is a rather uniform maximum diameter. The stems of plants vary in diameter from 1 mm., as in chirata, to 4 mm., as in scutellaria.

**Nature.** Stems are simple, as in cactus, or branched, as in scoparius.

**Nodes.** The nodes are enlarged in most of the species studied. Euphorbia Pilulifera is an example. In some the nodes may develop one branch, in which case they alternate on the stem, as in chirata; if they develop two stems at the node, the branches are then opposite, as in scutellaria.

**Internode.** This is variable and not diagnostic.

**6. Texture.** The stems of all the plants are fibrous. Chirata is quite woody; scutellaria is fibrous, but not woody. The sundews never have stems except when in flower.

**7. Color.** The color is purplish brown, as in chirata; yellowish brown, as in scutellaria; reddish brown, as in euphorbia.

**8. Surface.** The surface may be smooth, as in *droséra rotundifolia*; slightly winged, as in *chirata*; sunken, as in *scutellaria*; and spotted, as in a few of the stems of *euphorbia*.

**9. Fracture.** The fracture has little diagnostic importance in the study of stems of herbs.

**10. Outline.** The outline is quadrangular, as in *scutellaria* and in the small branches of *chirata*; or cylindrical, as in the larger *chirata* stems and in *euphorbia*.

**11, 12, 13.** The study of the cortex, wood and pith is not macroscopically diagnostic in the stems of the official plants.

## **CHIRATA**

1. Root of the plant. 2. Flowering and fruiting top. 3, Fruit. 4. Leaf showing the characteristic venation.

## **CHIRATA (Chirat.) N. F.**

**English name:** Chirata.

**Synonyms:** Chirayta, Chiretta, Bitter Stick.

**Botanical origin:** *Swertia Chirayita* (Roxburgh) Hamilton. (Fam. *Gentianaceæ*.)

**Part used:** Dried plant.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Northern India.

### **Description:**

*Chirata occurs* as entire and as broken pieces of the plant. These pieces measure up to 10 dm. in length. The stems are usually branched. The *nodes* are enlarged. The leaves and branches are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* varies from light yellow to purplish brown. The *surface* of the stem is smooth and slightly winged and striated. The *fracture* is fibrous. The *outline* of the thick stems is cylindrical, of the small stems four-sided. The *cortex* is thin. The *wood* is thin and brown. The *pith* is large, hollow or solid. A few roots, leaves and fruits are usually present. The *roots* are simple or branched, tapering and woody. The leaves are sessile. The *base* is rounded. The *margin* is entire. The *apex* is acute or acuminate. The *outline* is oblong-ovate. The *size* is variable. The larger leaves measure up to 9 cm. in length and to 3 cm. in width. The *under surface* shows five or six prominent veins. The *fruit* is a two-celled capsule; the carpels are acute and usually partially opened. The *odor* is not distinct. The *taste* is strongly bitter.

**Constituents:** Tannin, wax, bitter principles (ophelic acid and chiratin), etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Chiratæ; Dose, 1 mil (15 min.).



## DROSERA—ROUND-LEAVED

1, The round glandular leaves of the plant. 2, Flower cluster. 3, Large flower cluster. 4, Glandular hairs projecting from the edge of the leaf.

## **DROSERA (Droser.) N. F.**

### **(1) Round-leaved Drosera**

**English name:** Drosera.

**Synonyms:** Round-leaved Sundew, Common Sundew.

**Botanical origin:** *Drosera rotundifolia* Linné. (Fam. *Droseraceæ*.)

**Part used:** Air-dried flowering plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 30 per cent.

**Habitat:** Northern North America, south to Florida and Alabama.

#### **Description:**

Round-leaved Drosera occurs as a mixture of entire and broken pieces of the plant. The plants measure up to 12 cm. when in flower. The leaves are all basal and are arranged in a rosette. The petiole is flat and pubescent and has glandular hairs which measure up to 5 mm. in length. The base of the blade is cuneate. The margin is entire. The outline is orbicular or broader than long. The size varies. The largest blades measure up to 1 cm. in width. The upper surface and margins have numerous glandular hairs. The under surface is nearly smooth. The scape is simple or branched and smooth. The flowers have five sepals, five petals, five stamens, and one pistil with a three-parted style. The fruit is a three-parted capsule containing many seeds. The odor of the plant is not distinct. The taste is slightly bitter and acrid.

**Constituents:** Resin, glucose, tannin, peptonizing ferment, etc.

**Dose:** 4 Gm. (1 drachm).

#### **Preparations:**

Fluidextractum Droseræ; Dose, 4 mils (1 fl. dr.).



### DROSERA—INTERMEDIATE

1, Rosette of leaves. 2, Flower pedicle. 3, Cluster of flowers.

## DROSERA (Droser.) N. F.

### (2) Intermediate Drosera

**English name:** Drosera.

**Synonyms:** Intermediate Sundew.

**Botanical origin:** *Drosera intermedia* Hayne. (Fam. *Droseraceæ*.)

**Part used:** Plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 30 per cent.

**Habitat:** Northern North America, south to Florida and Louisiana.

#### Description:

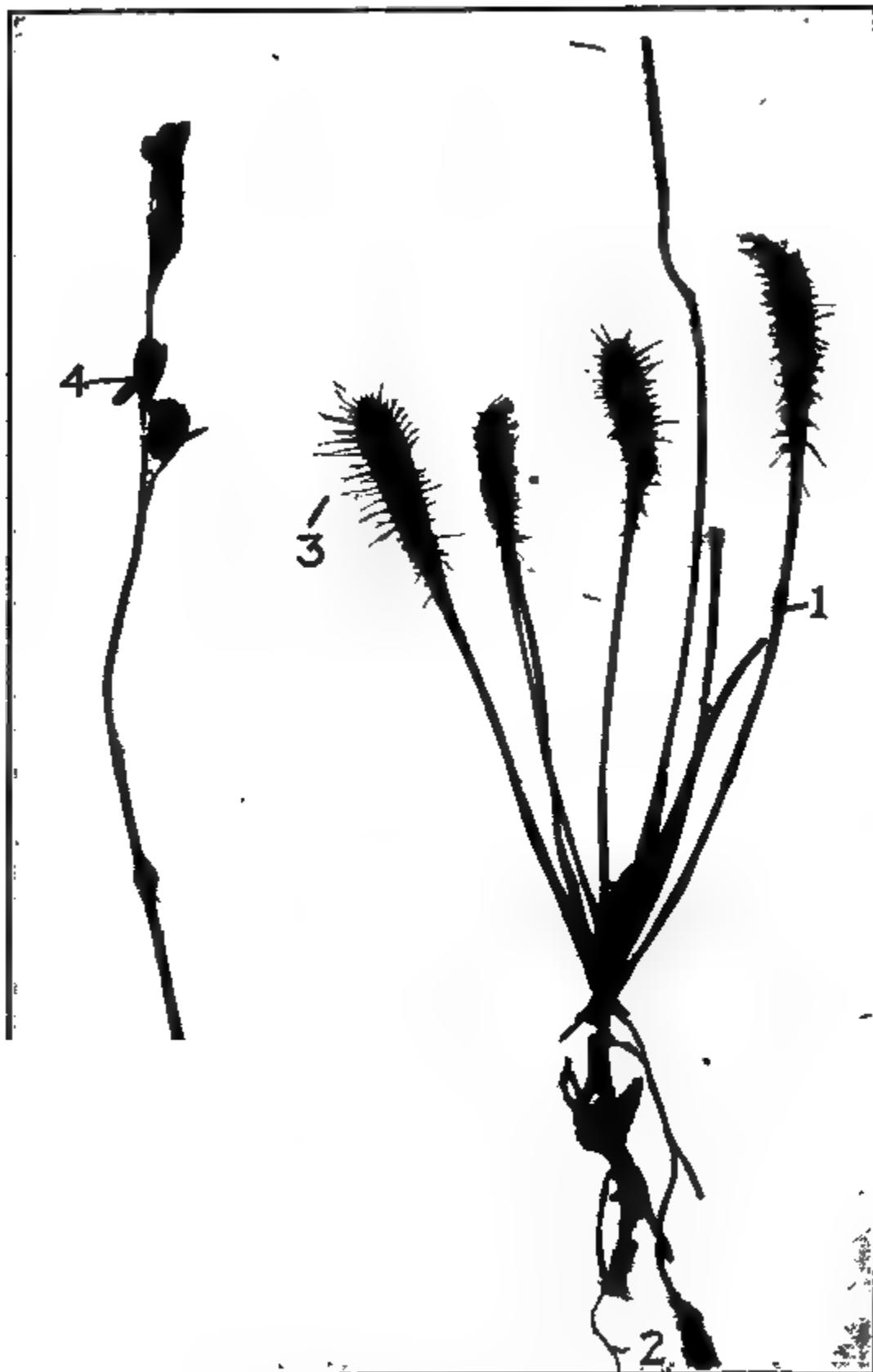
Intermediate Drosera occurs as a mixture of entire and broken pieces of the plant. The plants measure up to 11.5 cm. when in flower. The leaves are all basal and are arranged in an ascending rosette. The petiole is flat and glabrous; it measures up to 27 mm. in length. The base of the blade is acuminate. The margin is entire. The outline is spatulate. The size varies. The larger blade measures up to 13 mm. in length and to 4 mm. in diameter. The upper surface and margins have numerous glandular hairs. The under surface is smooth. The scape is simple or branched and smooth. The flowers have five sepals, five petals, five stamens, and one pistil with a three-parted style. The fruit is a three-parted capsule. The odor is not distinct. The taste is slightly bitter and acrid.

**Constituents:** Resin, glucose, tannin, peptonizing ferment, etc.

**Dose:** 4 Gm. (1 drachm).

#### Preparations:

Fluidextractum Droseræ; Dose, 4 mils (1 fl. dr.).



### DROSERA—LONG-LEAVED

1. Spathulate leaves of the plant. 2. Roots of the plant.  
3. Glandular hairs on the margin of the leaf. 4. Flower cluster.

## **DROSERA (Droser.) N. F.**

### **(3) Long-leaved Drosera**

**English name:** Drosera.

**Synonyms:** Long-leaved Sundew.

**Botanical origin:** *Drosera longifolia* Linné. (Fam. *Droseraceæ*.)

**Part used:** Air-dried flowering plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 30 per cent.

**Habitat:** Europe and United States.

#### **Description:**

Long-leaved *Drosera* occurs as a mixture of entire and broken pieces of the plant. These plants measure up to 24 cm. when in flower. The leaves are all basal and erect. The *petiole*, which is flat and mostly glabrous, measures up to 4.7 cm. in length. The *base* of the *blade* is strongly tapering. The *margin* is entire. The *outline* is oblong spatulate. The size varies. The largest blades measure up to 2 cm. in length and to 4 mm. in width. The *upper surface* and margins have numerous glandular hairs. The *under surface* is smooth. The *scape* is usually simple and smooth. The flowers have five sepals, five petals, five stamens, and one pistil with a three-parted style. The *fruit* is a three-parted capsule. The seeds are numerous. The *odor* is not characteristic. The *taste* is bitter and acrid.

**Constituents:** Resin, glucose, tannin, peptonizing ferment, etc.

**Dose:** 4 Gm. (1 drachm).

#### **Preparations:**

Fluidextractum *Droseræ*; Dose, 4 mils (1 fl. dr.).

## **SCUTELLARIA**

1, Peticola. 2, Acute apex. 3, Coarsely serrate margin.  
4, Rounded base. 5, Single flower. 6, Leaf and axillary  
raceme.

## **SCUTELLARIA (Scutell.) N. F.**

**English name:** Scutellaria.

**Synonyms:** Skullcap, Hoodwort, Madweed.

**Botanical origin:** *Scutellaria lateriflora* Linné. (Fam. *Labiatae*.)

**Part used:** Dried plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Newfoundland to British Columbia, south to Florida and New Mexico.

### **Description:**

Scutellaria occurs as entire and as broken pieces of the herb. The stems measure up to 4 mm. in diameter. The stems are branched. The nodes are slightly enlarged. The leaves and stems are opposite. The internodes are of unequal length. The texture of the stem is fibrous. The color is yellowish green. The surface is smooth and sunken on four sides. The fracture is fibrous. The outline is square. The cortex and wood are thin. The pith is large. The leaves have petioles measuring up to 2.5 cm. The base of the blade is rounded or cordate. The margin is coarsely serrate. The apex is acuminate or acute. The outline is ovate lanceolate. The size is variable. Large leaves measure up to 7 cm. in length and 3 cm. in width. The upper surface is dark green. The under surface is light green. The veins are prominent on both surfaces. The flowers are in terminal or axillary racemes. The calyx is campanulate (two-lipped). The white or blue corolla turns yellow when dry; the two-lipped calyx enlarges at the throat. The calyx is helmet-shaped in the fruit, and contains the fruit. The odor of the plant is not distinct. The taste is slightly bitter.

**Constituents:** Scutellarin (glucoside), volatile oil, tannin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Scutellariæ; Dose, 1 mil (15 min.).

## **EUPHORBIA PILULIFERA**

**1, Stems of the plant. 2, Root of the plant. 3, Yellow hairs growing on the stem. 4, Leaf. 5, Flower cluster.**

# **EUPHORBIA PILULIFERA (Euphorb. Pilul.) N. F.**

**English name:** Euphorbia Pilulifera.

**Synonyms:** Pill-bearing Spurge, Asthma Weed.

**Botanical origin:** *Euphorbia pilulifera* Linné. (Fam. *Euphorbiaceæ*.)

**Part used:** Dried plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Florida to Texas, south to Tropical America.

## **Description:**

*Euphorbia pilulifera* occurs as a mixture of the entire plant and broken pieces. The plant measures up to 25 cm. in length. The stems are simple or branched. The nodes are enlarged. The leaves and branches are alternate. The internodes are of variable length. The texture is fibrous. The color varies from grayish yellow to reddish brown. The surface is smooth, striated or spotted. The smaller stems are covered with a dense coat of long, yellow hairs; the thicker stems have scattered hairs. The fracture is brittle. The outline is cylindrical. The cortex, wood and pith are not distinctive. The leaves have short petioles. The blade is unequilateral and rounded at the base. The margin is finely serrate. The apex is acute. The outline is ovate lanceolate. The upper surface and the under surface are yellowish green and pubescent, and the veins are distinct. The flowers are inconspicuous and occur in axillary clusters. The fruits are very small and three-celled, and have as many as three seeds. The odor is not characteristic. The taste is bitter and acrid.

**Constituents:** Acrid and other resins. Not fully investigated.

**Dose:** 2 Gm. (30 grains).

## **Preparations:**

Fluidextractum Euphorbiæ Piluliferæ; Dose, 2 mils (30 min.).

## **COPTIS**

1, Leaf with a long petiole. 2, Portion of a rhizome with slender roots. 3, Tangled mass of leaves, rhizomes and roots.

## **COPTIS (Cop.) N. F.**

**English name:** Coptis.

**Synonyms:** Goldthread, Canker-root, Mouth-root.

**Botanical origin:** *Coptis trifolia* (Linné) Salisbury.  
(Fam. *Ranunculaceæ*.)

**Part used:** Plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Northern North America, south to Canada  
and Minnesota.

### **Description:**

*Coptis* occurs as a mixture of entire and broken pieces of the plant. The rhizomes measure up to 20 cm. in length and to 1 mm. in diameter. The leaves measure up to 10 cm. in length. The *rhizome* is horizontal and branched. Minute stem scars and a circle of root occur at the node. The *internodes* are long. The *texture* is fibrous. The *color* varies from light to dark orange. The *surface* is smooth. The *fracture* is very weak and brittle. The *outline* is cylindrical. The *cortex* and the *wood* are bright orange. The *leaves* are trifoliate and have long petioles up to 9 cm. The *base* of the segments is cuneate. The *margin* of the wedge-shaped portion is serrate, of the remaining portion crenate mucronate. The *apex* of the side segments is two-lobed, of the central segment three-lobed. The *upper surface* is dark green and shiny above; the *under surface* is light green and dull. The *odor* of the plant is not distinct. The *taste* is bitter.

**Constituents:** Alkaloids (berberine, coptine), etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Coptis; Dose, 2 mils (30 min.).

## **HELIANTHEMUM**

**1, Stems, leaves and flowers. 2, Flower. 3, Leaf. 4, Fruit.**

## **HELIANTHEMUM (Helianth.) N. F.**

**English name:** Helianthemum.

**Synonyms:** Frost-weed, Rock-rose.

**Botanical origin:** *Helianthemum canadense* (Linné)  
Michaux. (Fam. Cistaceæ.)

**Part used:** Herb.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Maine to Ontario, south to North Carolina  
and Kentucky.

**Description:**

Helianthemum occurs as a mixture of entire or broken stems with leaves attached or separated. The plant measures up to 20 cm. in length. The stems are branched. The nodes are distinct. The leaves, stems and buds are alternate. The internodes are of variable length. The texture is woody. The color varies from gray to grayish red. The surface is canescent. The fracture is brittle. The outline is cylindrical. The cortex is thin. The wood is thick. The pith is small and hollow. The petiole of the leaf is short; the longest measures up to 5 mm. The blade is tapering at the base. The margin is entire and slightly revolute. The apex is acute or rounded. The upper surface varies in color from green to yellowish green and is canescent. The under surface is grayish green and canescent. The flowers are solitary or clustered. The solitary flowers have a calyx of five sepals, a corolla of five yellow petals, an andræcium of thirty stamens, a gynæcium of one pistil with a 3-celled ovary, one style and a capitate stigma. The clustered flowers have a calyx of five sepals, no corolla (apetalous), an andræcium of four stamens, a gynæcium of one pistil with a 3-celled ovary, one style, and a clavate stigma. The fruit is a three-celled capsule with numerous reticulate seeds. The odor is slight. The taste is bitter.

**Constituents:** Fixed and volatile oils, wax, tannin, etc.

**Dose:** 4 Gm. (1 drachm).

**Preparations:**

Fluidextractum Helianthemi; Dose, 4 mils (1 fl. dr.).

## **CENTAURIUM**

**1.** Plants with flower clusters. **2.** Separate flower cluster.  
**3.** Two flowers. **4.** Opposite leaves.

## **CENTAURIUM (Centaur.) N. F.**

**English name:** Centaury.

**Synonyms:** European Century Herb, Lesser Centaury.

**Botanical origin:** *Erythraea Centaurium* (Linné) Persoon. (Fam. *Gentianaceæ*.)

**Part used:** Dried flowering plant.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Europe.

### **Description:**

Centaury occurs as small bundles of the entire herb, held together with a strand of grass. The largest herbs measure up to 2 cm. in length, the stems to 2 mm. in diameter. The nodes are distinct. The leaves and stems are opposite. The internodes are of variable length. The texture is fibrous. The color is light green. The surface is finely striated and winged. The fracture is fibrous. The outline is angled. The cortex and wood are thin. The pith is hollow. The leaves, which have no petiole, are sessile. The blade is tapering at the base. The margin is entire. The apex is acute. The outline varies from oval to lance-linear. The largest leaves measure up to 23 mm. in length and to 8 mm. in width. The upper surface is dark green. The under surface is light green and is usually three-nerved. The flowers occur in compound racemes. The individual flowers have short pedicels, a calyx of five-parted lobes, a corolla united below and expanded above into five lobes, an andræcium of five stamens, a gynæcium of two carpels. The fruit is a two-celled capsule. The odor is not characteristic. The taste is strongly bitter.

**Constituents:** Bitter glucoside, volatile oil, resin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Tinctura Amara; Dose, 2 mils (30 min.).

Alexandria Senna, whole leaf, 250 to 500 lbs. Wooden case  
covered with heavy burlap.

## CHAPTER IX

### HERBS

**I**N the study of herbs the following must be considered: Leaves, stems, flowers, and sometimes the fruits.

#### LEAVES

In the study of the leaves of herbs the following must be considered: (1) Occurrence; (2) petiole, length, width, and nature; (3) blade, base, margin, apex, outline, size, upper surface, under surface, texture, odor, and taste.

1. **Occurrence.** The leaves occur in the broken or entire condition.

2. **Petiole.** The petioles vary greatly. In *passiflora* they are short, in *senecio* they are long, etc.

3. **Blade.** (a) The *base* of *passiflora* is rounded; of *helianthemum*, tapering; of *senecio*, cordate. (b) The *margin* in *centaurium* and in *helianthemum* is entire; in *verbena* it is doubly serrate; and in *senecio* it is lobed. *Adonis* and *pulsatilla* have compound leaves. (c) The *apex* of *senecio* is rounded; of *centaurium* and *helianthemum*, acute; of *verbena*, acuminate. (d) The outline of the divisions of *adonis* leaves is capillary; of *centaurium*, lanceo-linear; *verbena* is oblong-lanceolate; that of many of the radicle leaves of *senecio* are orbicular. (e) The *upper surface* embraces a study of the color, markings, and veins. The color varies from dark green, as in *centaurium*, to purplish green, as in *verbena* and *senecio*, to yellowish green, as in *passiflora*. No special markings occur on the leaves of the herbs. The veins are usually even with the surface. (f) The *under surface* varies in color from grayish green, as in *verbena*, to gray, as in

senecio. The markings are not diagnostic. The veins are elevated and usually characteristically arranged. In centaurium the three veins are very prominent. (g) The *texture* of all the leaves is papery, and they are very brittle. (h) The *odor* is so slight in the leaves of the herbs as to be uncharacteristic. (i) The *taste* in all cases is bitter. In adonis there is also a slight acrid taste.

## STEMS

In the study of the stems of herbs the following must be considered: Occurrence, size, nature, nodes, internodes, texture, color, surface, fracture, outline, cortex, wood, and pith.

1. **Occurrence.** Stems occur in the broken, cut, or entire condition.
2. **Size.** The size of the stems of herbs varies from 2 mm., as in centaurium, to 7 cm., as in verbena.
3. **Nature.** The stems of herbs may be simple, as in pulsatilla, or branched, as in centaurium.
4. **Nodes.** The nodes are usually enlarged and the branches may be alternate, one at a node, as in passiflora; or opposite, two at a node, as in centaurium.
5. **Internodes.** A study of the internodes is not diagnostic.
6. **Texture.** The texture of the stems of all the herbs is fibrous but not woody.
7. **Color.** The stem of centaurium is light green; of helianthemum, grayish red; of verbena, purplish brown; of senecio, grayish purple; of passiflora, grayish or yellowish green; of adonis and pulsatilla, purplish.
8. **Surface.** The surface of helianthemum is canescent (hairy); of centaurium, winged; of verbena, channeled; of passiflora, striated; of adonis, sunken.
9. **Fracture.** The fracture is usually uneven and of slight importance.

**10. Outline.** The outline of verbena is quadrangular; of passiflora, cylindrical; of senecio, adonis, and pulsatilla, irregular.

**11, 12, and 13.** The study of the cortex, wood and pith is not important in the study of the stems of the official herbs.

## **VERBENA**

**1.** Mass of the cut herb. **2.** Paniced spike of flowers. **3.** Doubly serrate margin.

## **VERBENA (Verben.) N. F.**

**English name:** Verbena.

**Synonyms:** Blue Vervain.

**Botanical origin:** *Verbena hastata* Linné. (Fam. Verbenaceæ.)

**Part used:** Herb (overground portion).

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Nova Scotia to British Columbia, south to Florida and New Mexico.

### **Description:**

Verbena occurs as a mixture of broken and cut pieces of the herb. These pieces are of variable length and up to 7 cm. in diameter. The uncut stem is branched. The nodes are enlarged. The leaves and branches are opposite. The internodes are variable in length. The texture is fibrous. The color varies from green to purple. The surface is usually channeled on its four sides. The fracture is fibrous. The outline is quadrangular. The cortex is thicker at the angles. The wood is white. The pith is large, hollow and cylindrical. The petiole of the leaf measures up to 2 cm. The blade is rounded at the base. The margin is coarsely and doubly serrate; the inner teeth are smaller than the outer. The apex is acuminate or acute. The outline is mostly oblong-lanceolate. The upper surface is green or purplish green. The under surface is grayish green and the veins are prominent. The flowers occur in panicled spikes. Each flower is subtended by a subulate bract. The calyx is five-lobed. The corolla is usually blue or pink and five-lobed. The andræcium consists of four stamens. The gynæcium consists of one pistil with a four-celled ovary, one style, and two stigmas, but only one lobe is stigmatic. The fruit, consisting of four nutlets, is enclosed in the calyx. The odor of the plant is not characteristic. The taste is bitter.

**Constituents:** Tannin and bitter principle. Not fully investigated.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Verbenæ; Dose, 1 mil (15 min.).

## **SENECIO**

1. Leaf showing doubly dentate margin. 2. Small leaf.  
3. Lyrate pinnatifid leaf of the stem. 4. Flower. 5.  
Involucra bracts and receptacle. 6. Stem.

## **SENECIO (Sene.) N. F.**

**English name:** Senecio.

**Synonyms:** Life-root, Golden Ragroot.

**Botanical origin:** *Senecio aureus* Linné. (Fam. *Compositæ*.)

**Part used:** Dried overground portion.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Newfoundland to Ontario, south to Florida and Texas.

### **Description:**

*Senecio* occurs as a mixture of the entire and broken pieces of the herb. The stems are branched. The *nodes* are distinct. The leaves and stems are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* varies from yellow to grayish purple. The *fracture* is brittle. The *outline* is irregular. The *cortex* and *wood* are thin. The *pith* is hollow. There are two types of leaves, radical and stem. The radical leaves have petioles measuring up to 28 cm. The *base* is usually cordate. The *margin* is sharply and often doubly dentate. The *apex* is rounded. The *outline* is ovate or nearly orbicular. The *upper surface* varies from green to purplish green. The *under surface* is grayish, brownish, or purplish green, and the veins are prominent. The stem leaves are subtended by bracts, and they are sessile, lyrate pinnatifid. The flowers occur as heads arranged in corymbs. The *peduncle* is long. The *involucre* consists of two rows of bracts, the outer smaller, the inner larger and linear. The *ray flowers* are yellow and number up to twelve. The *disk flowers* are numerous and perfect. The *receptacle* is convex and non-scaly. The *fruits* are achenes, each of which has a white pappus. The *odor* is not distinct. The *taste* is bitter and slightly pungent.

**Constituents:** Acrid bitter principle and tannin. Not fully investigated.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Senencionis; Dose, 4 mils (1 fl. dr.).

## *MANGIFERA*

1, Three-lobed leaf. 2, Coiled tendril. 3, Stem. 4, Fruit.  
5, Developing fruit. 6, Crown. 7, Flower.

## PASSIFLORA (Passiflor.) N. F.

**English name:** Passion Flower.

**Synonyms:** Passion Vine.

**Botanical origin:** *Passiflora incarnata* Linné. (Fam. *Passifloraceæ*.)

**Part used:** Herbage collected after some of the berries have matured.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Virginia to Missouri, south to Florida and Texas.

### Description:

Passion Flower Herb occurs as broken pieces. These pieces are of variable length. The stems are branched. The nodes are distinct. The leaves and stems or scars are alternate. The internodes are of variable length. The texture is fibrous. The color is grayish green. The surface is striated. The fracture is brittle. The outline is cylindrical. The cortex and wood are thin. The pith is hollow or solid. The leaves vary from three to five-lobed. The petioles measure up to 1 cm. At the point of union with the blade there are two glands. The blade is round or subcordate at the base and the margin is finely serrate. The apex of the lobes is acute. The outline is orbicular if the lobes are connected. The size is variable. The length is up to 12 cm., the width to 12 cm. The upper surface is dark green. The under surface is yellowish green and the veins are prominent. The pedicle of the flower is three-bracted. The flower has a calyx of five imbricated, cuspidate sepals, a corolla of five yellow petals, a purple crown, an andræcium of five stamens with versatile anthers, and a gynæcium of one pistil with a three-parted style terminating in three club-shaped stigmas. The fruit is an indehiscent berry with numerous seeds. The odor is not distinct. The taste is slightly bitter.

**Constituents:** Alkaloid (trace). Not fully investigated.

**Dose:** 0.2 Gm. (3 grains).

### Preparations:

Tinctura Passifloræ; Dose, 0.6 mil (10 min.).

## **ADONIS**

**1, Stem. 2, Stem covered with leaves. 3, Flowers. 5, Fruit.**

## **ADONIS (Adonis) N. F.**

**English name:** Adonis.

**Synonyms:** Pheasant's Eye, False Hellebore.

**Botanical origin:** *Adonis vernalis* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Dried overground portion, Herb.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Asia and Northern Europe.

### **Description:**

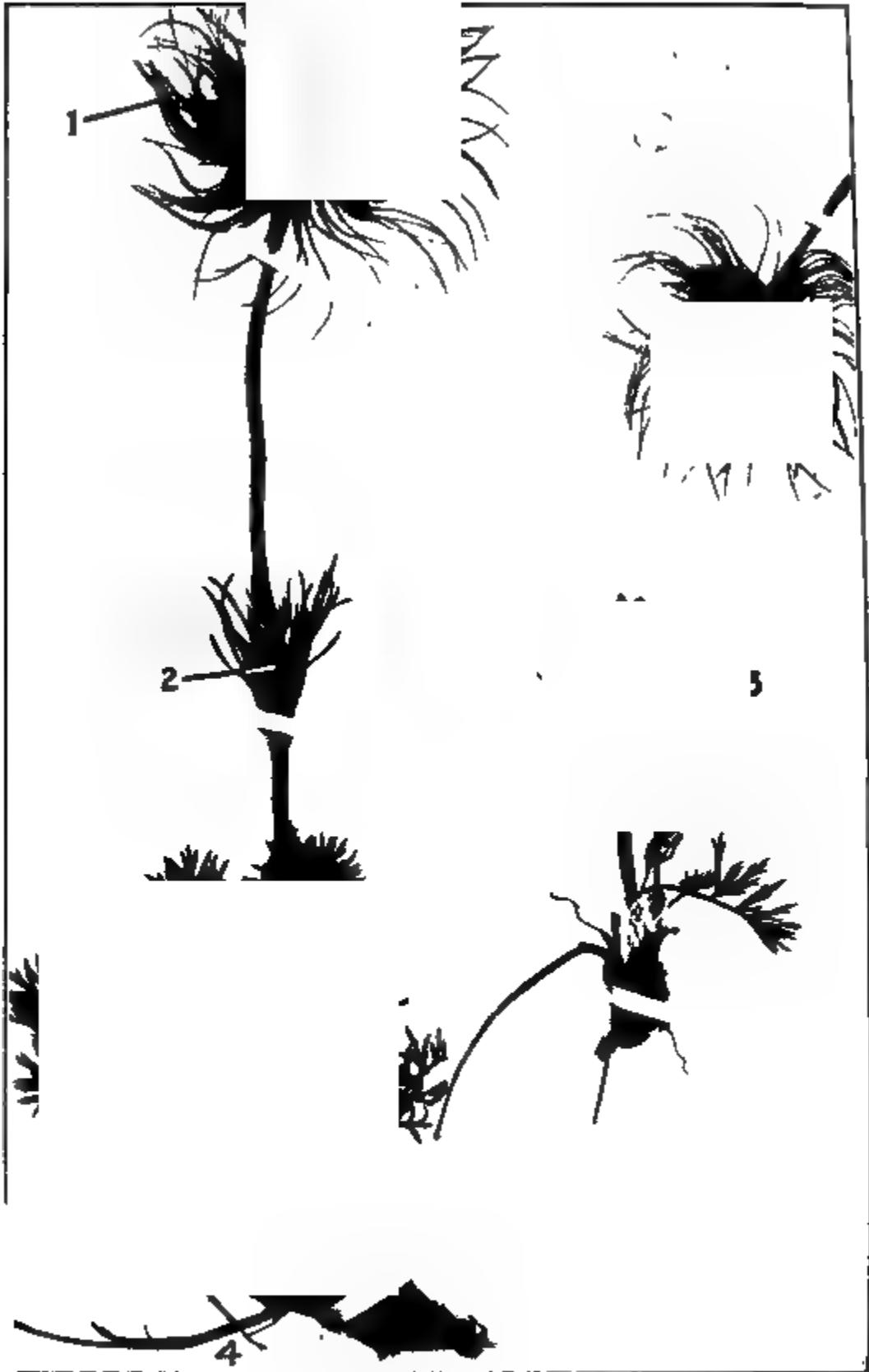
*Adonis* occurs as a mixture of entire and broken pieces of the plant. The longest plants measure up to 25 cm. in length. They are simple or branched. The *nodes* are distinct. The *internodes* are variable in length. The *texture* is fibrous. The *color* varies from green to purplish green. The *surface* is striated longitudinally and sunken. The *base* is surrounded by numerous scales. The *fracture* is fibrous. The *outline* is irregular. The *cortex* and *wood* are thin, collapsed on the hollow pith. The *leaves* are compound. The *petiole* is short. The *blade* is pinnatifid; the ultimate segments capillary. The *flowers* are solitary and terminal. It has a *calyx* of five greenish gray sepals, a *corolla* of five to twenty yellowish petals, an *andræcium* of an indefinite number of stamens, and a *gynæcium* of an indefinite number of pistils. The *fruit* is capitate and consists of a great number of achenes. The *odor* is not distinct. The *taste* is bitter and acrid.

**Constituents:** Adonidin (glucoside), etc.

**Dose:** 0.125 Gm. (2 grains).

### **Preparations:**

Fluidextractum Adonis; Dose, 0.125 mil (2 min.).



### PULSATILLA—ANEMONE

1. Many plumose achenes. 2. Small leaves. 3. Flower.  
4. Radical leaves.

## **PULSATILLA (Pulsatil.) N. F.**

### **(1) Anemone Pulsatilla**

**English name:** Pulsatilla.

**Synonyms:** Pasque Flower, Wind Flower.

**Botanical origin:** *Anemone Pulsatilla* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Dried herb.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe and Northern Asia.

#### **Description:**

*Anemone Pulsatilla* occurs as entire or broken pieces of the herb. The stems are present when the plant is in flower or fruit. They are simple. The texture is herbaceous. The color is grayish green. The surface is striated and hairy. The fracture is uneven. The outline is irregular. The cortex and wood are not distinct. The pith is white. The leaves, which are longer than broad, are all radical. The petioles are of variable length. The blade is twice pinnately compound and the divisions are narrowly linear (narrowest of the official varieties). The flowers are solitary, terminal and erect. The six sepals are twice the length of the stamens. The andræcium consists of numerous stamens; the gynæcium, of numerous plumose pistils which are longer than the stamens. The fruit is an achene with a persistent plumose style. The odor is not distinct. The taste is slightly acrid.

**Constituents:** Tannin, volatile oil, bitter principle, anemonin (pulsatilla camphor), etc.

**Dose:** 0.3 Gm. (5 grains).

#### **Preparations:**

Tinctura Pulsatillæ; Dose, 2 mils (30 min.).



### PULSATILLA—EUROPEAN

1, Plumose achenes. 2, Small leaves. 3, Flower. 4, Out  
stem. 5, Circle of radical leaves.

**PULSATILLA (Pulsatil.) N. F.**  
**(2) European Pulsatilla**

**English name:** Pulsatilla.

**Synonyms:** European Pulsatilla, European Pasque Flower.

**Botanical origin:** *Anemone pratensis* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Dried herb.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe and Northern Asia.

**Description:**

European Pulsatilla occurs as entire or broken pieces of the herb. The stem (flower stalk) is present only in fruiting and flowering specimens. These stems are simple and below the flower there are three palmately divided hairy bracts. The texture is herbaceous. The color is grayish purple. The surface is finely striated and hairy. The fracture is uneven. The outline is irregular. The cortex and wood are thin. The pith is small. The leaves are longer than broad. The petioles are usually purple and they are hairy and of variable length. The blade is twice pinnately compound. The divisions are linear (broader than in *A. Pulsatilla* but narrower than in *A. Ludoviciana*). The flowers are terminal, solitary, nodding, bell-shaped and dark violet. The six sepals are turned back at the tip and their length is not twice that of the stamens. The andræcium consists of numerous stamens. The gynæcium of numerous plumose pistils. The fruit is an achene with a persistent plumose style. The odor is not distinct. The taste is slightly acrid.

**Constituents:** Tannin, volatile oil, bitter principle, anemonin (pulsatilla camphor), etc.

**Dose:** 0.3 Gm. (5 grains).

**Preparations:**

Tinctura Pulsatillæ; Dose, 2 mils (30 min.).

**PULSATILLA—AMERICAN**

1, Plumose achenes. 2, Closed flower. 3, Open flower.  
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## **PULSATILLA (Pulsatil.) N. F.**

### **(3) American Pulsatilla**

**English name:** Pulsatilla.

**Synonyms:** American Pulsatilla, Prairie Anemone.

**Botanical origin:** *Anemone Ludoviciana* (Nuttall)  
Heller. (Fam. *Ranunculaceæ*.)

**Part used:** Herb.

**Impurities:** Not more than 5 per cent. of foreign  
matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** British Columbia, Nebraska south to Texas.

#### **Description:**

American Pulsatilla occurs as entire or broken pieces of the herb. The stems are present only when the plant is in flower or fruit. The stems are simple and just below the flower stalks there are three palmately divided hairy bracts. These bracts are best seen in the fruiting specimen. The texture is herbaceous. The color is grayish or purplish green. The surface is finely striated and hairy. The fracture is uneven. The outline is irregular. The cortex and wood are thin. The pith is large and frequently hollow. The leaves are broader than long and all are radical. The petioles are usually purple and they measure 35 cm. or less in length. The blade is palmate—pinnately compound; the divisions measure 6 mm. or less in width (broadest of the official varieties). The flowers are solitary, terminal and erect. The five-seven purple sepals are twice as long as the stamens. The andræcium consists of numerous stamens. The gynæcium consists of numerous plumose pistils. The fruit is an achene with a persistent plumose style. The odor is not distinct. The taste is slightly acrid.

**Constituents:** Tannin, volatile oil, bitter principle, anemonin (pulsatilla camphor), etc.

**Dose:** 0.3 Gm. (5 grains).

#### **Preparations:**

Tinctura Pulsatillæ; Dose, 2 mils (30 min.).

Stramonium Leaves, 450 lbs. In burlap packing, held by  
iron bands.

## CHAPTER X

### LEAVES AND FLOWERING TOPS

**I**N the study of herbs the following must be considered: Leaves, stems and flowers.

#### LEAVES

In the study of leaves the following must be considered: Occurrence: petiole,—length, width and nature; blade,—base, margin, apex, outline, size, upper surface, under surface, texture, odor and taste.

1. **Occurrence.** Leaves occur either in broken or in entire condition.

2. **Petiole.** The petiole may be short and slender, as in spearmint, or short and thick, as in belladonna, or long and slender, as in melilotus, or long and thick, as in stramonium.

3. **Blade.** (a) The *base* may be truncate, as in melilotus; or rounded, as in peppermint, spearmint and thyme; or inequilateral, as in henbane; or tapering, as in belladonna and lobelia; or cordate, as in catnep. (b) The *margin* of belladonna, thyme and galega is entire. In peppermint, spearmint, melilotus and grindelia it is serrate. In catnep, lobelia and eupatorium the margin is crenate. In hyoscyamus the margin is lobed. In absinthium and cannabis the margin is divided. (c) The *apex* of melilotus is truncate or notched. The divisions of absinthium leaf are obtuse; of henbane, eupatorium, cataria, lobelia, spearmint, peppermint and thyme, acute; of galega, mucronate. (d) The *outline* of thyme is linear-lanceolate; of spearmint, oblong-lanceolate; of melilotus, oblong-oval; of belladonna, ovate-lanceolate. (e) The *upper surface* embraces the color, the markings and the veins. The color is in most cases dark green. In

henbane it is yellowish green; in belladonna, yellowish brown. In most leaves the surface is dull, but in the grindelia species the surface is shiny, because of a layer of resin. Thyme has numerous pits or oil cavities; in belladonna there are numerous holes which extend from the upper to the lower surface of the leaf. The veins are usually on a level with the surface of the leaf tissues. (f) The *under surface* is usually higher colored than the upper; grayish green is the prevailing color. In catnip and eupatorium the under surface is hairy. Many of the other leaves have hairs, but they are not macroscopic. (g) The *texture* of the leaves from the flowering tops is almost without exception thin and papery, and they are very brittle. (h) *Odor.* Belladonna and henbane have a narcotic odor. Thyme, peppermint, spearmint, eupatorium, absinthium and grindelia species have an aromatic odor. (i) *Taste.* Thyme, spearmint, peppermint, eupatorium, absinthium and the grindelia species have a pungent taste. Absinthium, eupatorium, henbane and belladonna have a bitter taste.

## STEMS

In the study of stems, the following must be considered: Occurrence, size, nature, nodes, internodes, texture, color, surface, fracture, outline, cortex, wood and pith.

1. **Occurrence.** The stems occur in the broken or cut condition.
2. **Size.** The size varies from 0.5 mm., as in thymus, to 7 mm., as in henbane.
3. **Nature.** The stems are simple or branched.
4. **Nodes.** The nodes are usually enlarged, and the branches from them may be alternate (one at a node) or opposite (two at a node).
5. **Internodes.** The internodes may be short or long, but in most cases they are of variable length and unimportant.
6. **Texture.** The texture of the stems of thyme is

fibrous and woody, but in the stems found in the other drugs the texture is fibrous and non-woody.

7. **Color.** The color of the stems varies from green to purple to brown to gray.

8. **Surface.** The surface of peppermint, spearmint and catnep is channeled; of lobelia, slightly channeled; absinthium, cannabis and eupatorium are striated; henbane is sunken; absinthium, cannabis, eupatorium and lobelia are hairy.

9. **Fracture.** The fracture of thyme stem is hackly; other stems have an uneven fracture.

10. **Outline.** The outline of peppermint, spearmint and catnip is quadrangular; of cannabis, absinthium, eupatorium and the grindelias, cylindrical; of henbane, sunken.

11, 12, 13. The study of the *cortex*, *wood* and *pith* is not diagnostic.

## **THYMUS**

1. Mass of leaves and flowers. 2. Tops of the plant. 3.  
Flowers.

## THYMUS N. F.

**English name:** Thyme.

**Synonyms:** Garden Thyme, Common Thyme.

**Botanical origin:** *Thymus vulgaris* Linné. (Fam. *Labiatae*.)

**Part used:** Dried tops.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 14 per cent.

**Habitat:** Southern Europe; cultivated.

### Description:

Thyme occurs as broken pieces of the flowering tops, or as a mixture of leaves and flowers. The stems are variable in length and diameter. The stems are simple or branched. The nodes are enlarged. The leaves and branches are opposite. The internodes are variable in length. The texture is fibrous. The color varies from gray to purplish brown. The surface is pubescent. The fracture is tough. The outline of the larger stems is nearly cylindrical, of the smaller stems quadrangular. The cortex is thin and the wood is thick and fibrous. The pith is small and central. The leaves are sessile; the petiole measures up to 2 mm. in length. The blade is slightly rounded and it tapers into the short petiole. The margin is entire and revolute. The apex is acute. The outline varies from linear-lanceolate to ovate-lanceolate. The blade measures up to 8 mm. in length and to 2 mm. in diameter. The upper surface is grayish green and hairy and pitted. The under surface is gray and hairy and pitted. The flowers are arranged in axillary or terminal clusters. The calyx is united below into a tube, free above; the four lobes are subulate. The corolla is united below, free above, and bilabiate; three lobes are short and small, and one lobe is large and emarginate. The andræcium consists of four exserted stamens. The gynæcium consists of one pistil with a four-celled ovary and one curved exserted two-parted style. The fruit consists of four nutlets enclosed in a persistent calyx. The odor is aromatic. The taste is pungent and warming.

**Constituents:** Volatile oil, tannin, resin, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Thymi; Dose, 4 mils (1 fl. dr.).  
Oleum Thymi U. S. P.; Dose, 0.2 mil (3 min.).

## **BELLADONNAE FOLIA**

1, Perforated leaf. 2, Flower. 3, Five stamens. 4, Fruit.  
5, Upper and under surface of the fruit. 6, Five-cleft  
calyx.

# BELLADONNÆ FOLIA (Bellad. Fol.) U. S. P.

**English name:** Belladonna Leaves.

**Synonyms:** Deadly Nightshade Leaves, Belladonnæ folium P. I.

**Botanical origin:** *Atropa Belladonna* Linné. (Fam. Solanaceæ.)

**Part used:** Dried leaves and tops.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** Not less than 0.3 per cent. of total alkaloids.

**Ash:** Not more than 20 per cent.

**Habitat:** Central Asia and Central Europe; cultivated in United States.

## Description:

Belladonna Leaves occur as a mixture of broken pieces of leaves and flowering tops. The stems measure up to 25 cm. in length and to 12 mm. in diameter. They are simple or branched. The nodes are distinct. The leaves and branches are opposite. The internodes are of variable length. The texture is fibrous. The color varies from green to brownish green. The surface is smooth and sunken. The fracture is brittle. The outline is irregular. The cortex and wood are thin. The pith is large. The leaves have petioles up to 4.5 cm. in length. The base is tapering and narrows into the petiole, or is slightly cordate. The margin is entire. The apex is acute. The outline varies from broadly to narrowly ovate-lanceolate. They measure up to 27 cm. in length and the blade up to 11.7 cm. in width. The upper surface is greenish or yellowish brown, and it usually has several holes of variable size. The under surface is light yellowish or grayish brown, and the veins are prominent. The flowers are axillary. The pedicles measure up to 2.5 cm. The calyx is deeply five-cleft; the divisions are acute. The corolla is campanulate and five-lobed. The andræcium consists of five stamens. The gynæcium consists of one pistil with a two-celled ovary and an exserted style. The fruit is a two-celled berry. The seeds are small and reticulate. The odor is narcotic. The taste is bitter and acrid.

**Constituents:** Starch, albumin, alkaloids (atropine, hyoscyamine, scopolamine, belladonnine, etc.), chlorophyl, wax, etc.

**Dose:** 0.06 Gm. (1 grain).

## Preparations:

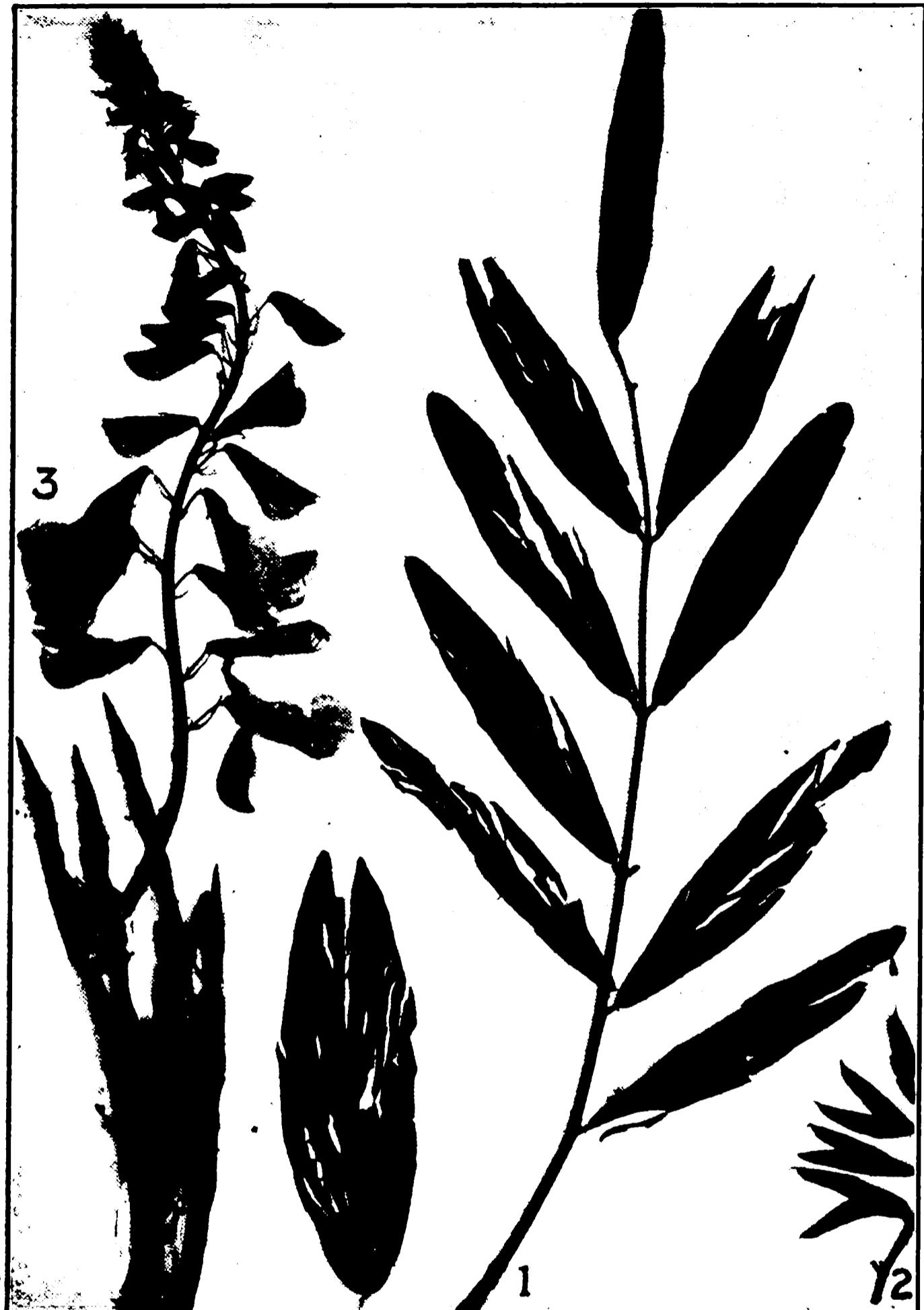
Emplastrum Belladonnæ (from extract).

Extractum Belladonnæ Foliorum; Dose, 0.015 Gm. ( $\frac{1}{4}$  grain).

Linimentum Belladonnæ (from fluidextract).

Tinctura Belladonnæ Foliorum; Dose, 0.75 mil (12 min.).

Unguentum Belladonnæ (from extract).



## GALEGA

1, Compound leaf. 2, Small leaves. 3, Flower cluster and, just below, five fruits.

## GALEGA (Galeg.) N. F.

**English name:** Galega.

**Synonyms:** European Goat's Rue.

**Botanical origin:** *Galega officinalis* Linné. (Fam. Leguminosæ.)

**Part used:** Flowering tops.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Mediterranean region to Central Europe.

### Description:

*Galega* occurs as broken pieces of the leaves and flowering tops. The *stems* measure up to 2.5 dm. in length and to 4 mm. in diameter. The stems are usually branched. The *nodes* are distinct. The leaves and branches are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* is greenish yellow. The *surface* is striated. The *fracture* is uneven. The *outline* is oblong. The *cortex* and *wood* are thin. The *pith* is hollow. The *leaves* have petioles which measure up to 2.5 cm. in length. The *blade* is compound, and is divided into six to eight pairs of leaflets and terminates in one (odd) leaflet. The *base* of the leaflets is tapering and rounded. The *margin* is entire. The *apex* is mucronate. The *outline* varies from ovate-lanceolate to oblong-lanceolate. The leaflets measure up to 4 cm. in length and to 11 mm. in diameter. The *upper* and *under surfaces* are yellowish green and distinctly, finely parallel-veined. The *flowers* are arranged in racemes, and they are papilionaceous. The *bracts* are subulate. The *pedicels* measure up to 5 mm. The *calyx* is tubular-spreading; the free portion terminates in five subulate lobes. The *corolla* consists of five petals. The *keel* is formed of two coherent petals. The *wings* are of equal size. The *standard* is large. The *androcium* consists of five stamens. The *gynoecium* consists of one pistil. The *fruit* is a legume.

**Constituents:** Bitter principle and tannin. Not fully investigated.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Galegæ; Dose, 4 mils (1 fl. dr.).

## **MENTHA PIPERITA**

**1.** Stem, leaves and flowers. **2.** Petiole. **3.** Sharply serrate margin. **4.** Acute apex. **5.** Flower. **6.** Flower spike.

## **MENTHA PIPERITA (Menth. Pip.) U. S. P.**

**English name:** Peppermint.

**Synonyms:** Brandy Mint, Lamb Mint.

**Botanical origin:** *Mentha piperita* Linné. (Fam. *Labiatae*.)

**Part used:** Leaves and flowering tops.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe; naturalized in North America, Nova Scotia to Minnesota, south to Florida and Alabama; cultivated in Japan and United States.

### **Description:**

Peppermint occurs as a mixture of entire and broken pieces of the flowering tops with detached and entire and broken leaves. The stems are simple or branched. They measure up to 9.5 cm. in length and to 3.3 cm. in width. The nodes are enlarged. The leaves are opposite. The internodes are of variable length. The texture is fibrous. The color varies from green to purple. The surface is striated longitudinally and channeled on its four sides. The fracture is tough and incomplete. The outline is quadrangular. The cortex and wood are thin. The pith is white, large, and solid or hollow. The petiole of the leaves measures up to 15 mm. The blade is rounded at the base and tapers slightly into the petiole. The margin is sharply serrate. The apex is acute. The outline varies from ovate to ovate-lanceolate. The blade measures up to 7.5 cm. in length and to 32 mm. in width. The upper surface varies in color from yellowish green to purple, and the veins are slightly depressed. The under surface is light green, and the veins are more prominent. The flowers are arranged in dense, broad, interrupted spikes. The bracts are lanceolate. The calyx is campanulate; its five teeth are subulate. The corolla is united and tubular below, four-lobed above; its color varies from light to dark purple. The andræcium consists of four stamens of equal length. The gynæcium consists of one pistil with a four-celled ovary and a two-parted style. The fruit consists of four nutlets enclosed in the persistent calyx. The odor is aromatic. The taste is pungent and finally cooling.

**Constituents:** Volatile oil, chlorophyl, tannin, resin, gum, etc.

**Dose:** 4 Gm. (60 grains).

### **Preparations:**

*Aqua Menthae Piperitæ* (from oil); Dose, 15 mils (4 fl. drs.).

*Oleum Menthae Piperitæ*; Dose, 0.2 mil (3 min.).

*Spiritus Menthae Piperitæ*; Dose, 2 mils (30 min.).

## **MENTHA VIRIDIS**

1, Short petiole. 2, Serrate margin. 3, Acute apex. 4,  
Prominent vein on the under surface. 5, Single spike of  
flowers. 6, Panicked spike of flowers.

## **MENTHA VIRIDIS (Menth. Vir.) U. S. P.**

**English name:** Spearmint.

**Synonyms:** Mint, Brown or Garden Mint.

**Botanical origin:** *Mentha spicata* Linné (*Mentha viridis* Linné). (Fam. *Labiatae*.)

**Part used:** Leaves and flowering tops.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe; naturalized in North America, Nova Scotia to Minnesota, south to Florida and Kansas.

### **Description:**

Spearmint occurs as a mixture of entire and broken pieces of the flowering tops with detached and entire and broken leaves. The stems measure up to 40 cm. in length and to 4 mm. in diameter. The nodes are enlarged. The leaves are opposite. The internodes are of variable length. The texture is fibrous. The color varies from green to purplish green. The surface is striated longitudinally and channeled on its four sides. The fracture is tough and incomplete. The outline is quadrangular. The cortex and wood are thin. The pith is large and white. The leaves are sessile above and petioled below. The petiole measures up to 5 mm. in length. The blade is rounded and slightly inequilateral at the base. The margin is sharply serrate; the teeth are usually of unequal length and more abundant near the apex. The apex is usually acute. The outline varies from ovate-lanceolate to oblong-lanceolate. The leaves measure up to 7.5 cm. in length and the blade up to 2.5 cm. in diameter. The upper surface is greenish yellow and green, and the veins are distinct. The under surface is grayish green, and the veins are distinct. The flowers are arranged in long, narrow, acute interrupted spikes. The bracts are lanceolate. The calyx is united into a tube below, free above, and the five teeth are subulate. The corolla is united and tubular below, four-lobed above; it has three short and one long emarginate light purple lobes. The andræcium consists of four stamens of equal length. The gynæcium consists of one pistil with a four-celled ovary and a two-parted style. The fruit consists of four nutlets enclosed by the persistent calyx. The odor is persistently aromatic. The taste is pungent, but not cooling.

**Constituents:** Volatile oil, tannin, chlorophyl, resin, gum, etc.

**Dose:** 4 Gm. (60 grains).

### **Preparations:**

Aqua Menthae Viridis (from oil); Dose, 15 mils (4 fl. drs.).  
Oleum Menthae Viridis; Dose, 0.2 mil (3 min.).  
Spiritus Menthae Viridis (from oil); Dose, 2 mils (30 min.).

## **MELILOTUS**

1, Cluster of young leaves. 2, Leaves of the flowering stalk. 3, Raceme of flowers 4, Raceme of short hairy pods.

## **MELILOTUS (Melilot.) N. F.**

**English name:** Melilot.

**Synonyms:** Yellow Sweet Clover, Yellow Melilot.

**Botanical origin:** *Melilotus officinalis* (Linné) Lamark. (Fam. Leguminosæ.)

**Part used:** Leaves and flowering tops.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe; naturalized throughout southern Canada and United States.

### **Description:**

*Melilot* occurs as a mixture of broken and cut pieces of the leaves and flowering tops. The *stems* measure up to 6 dm. in length and up to 8 mm. in diameter. The stems are branched or simple. The *nodes* are prominent. The leaves and stems are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* varies from light green to greenish purple. The *surface* is striated and winged. The *fracture* is fibrous. The *outline* is angled. The *cortex* is thin and green. The *wood* is yellow. The *pith* is large and hollow. The *leaves* are trifoliate. The *petiole* measures up to 2.3 cm. in length. The *leaflets* have *petioles* up to 1 mm. in length. The *blades* are tapering or cuneate at the *base*. The *margin* is sharply serrate. The *apex* is notched, truncate, or rounded. The *outline* varies from narrowly oblong to oval to obovate. The *blades* of the flowering branches measure up to 24 mm. in length and up to 5 mm. in width; those of the young, non-flowering branches measure up to 28 mm. in length and up to 14 mm. in width. The *upper surface* varies from dark to yellowish green. The *under surface* is grayish green. The *veins* are distinct on both surfaces; the branches of the midvein terminate in a tooth. The *flowers* occur in racemes. The *pedicels* measure up to 2 mm. The *calyx* is campanulate; the five lobes are subulate and shorter than the tube. The *corolla* is papilionaceous. The *standard* is broad and erect. The *wings* are narrower than the standard, and the *keel* is shorter and obtuse. The *andræcium* consists of 10 stamens in two groups. The *gynæcium* consists of one pistil with a one-celled ovary and a long slender style. The *fruit* is a short, thick, globose hairy pod, with the persistent base of the style.

**Constituents:** Cumarin, resin, acid, volatile oil, etc.

### **Preparations:**

None.



### GRINDELIA CAMPORUM

1. Leaf with serrate margin and acute apex. 2. Involucre with overlapping recurved bracts. 3. Circle of ray flowers.

## **GRINDELIA (Grindel.) U. S. P.**

### **(1) Grindelia Camporum**

**English name:** Grindelia.

**Synonyms:** Gum Plant.

**Botanical origin:** *Grindelia camporum* Greene. (Fam. *Compositæ*.)

**Part used:** Leaves and flowering tops.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** California.

#### **Description:**

*Grindelia camporum* occurs as broken and entire pieces of the leaves and flowering tops. The stems measure up to 30 cm. in length and to 2 cm. in diameter. They are branched. The nodes are small. The leaves and branches are alternate. The internodes are of variable length. The texture is fibrous. The color is pinkish yellow. The surface is striated. The fracture is fibrous. The outline is nearly cylindrical. The cortex and wood are thin, the pith is large. The leaves are sessile and clasping. The base of the blade is subcordate. The margin is serrate and the teeth are irregularly placed. The apex is acute. The outline of the basal leaves is oblong-spatulate, of the upper leaves oblong. The blade measures 6.2 cm. or less in length and 15 mm. or less in width, the narrowest part frequently being in the middle of the length. The upper surface is pale bright green, resinous and shiny, and the veins are even with the surface. The under surface is lighter and the veins are elevated and indistinct near the apex. The flowers are arranged in corymbs. The bracts subtending each flower are entire, clasping and linear-lanceolate. The involucre is 24 mm. or less in width. The bracts are long, linear and the tips are recurved. All parts of the involucre are resinous. The ray flowers are pistillate, orange brown and ligulate. The disk flowers are light yellow and perfect. The disk achenes are angled, compressed and biauriculate. The odor is slightly aromatic. The taste is aromatic and bitter.

**Constituents:** Volatile oil, resin, saponin, grindelin, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Grindeliae; Dose, 2 mils (30 min.).



### **GRINDELLIA CUNEIFOLIA**

1, Portion of the root. 2, Large basal leaf. 3, Small stem leaf. 4, Involucre. 5, Ray flowers.

**GRINDELIA (Grindel.) U. S. P.**  
**(2) Grindelia Cuneifolia**

**English name:** Grindelia.

**Synonyms:** None in common use.

**Botanical origin:** *Grindelia cuneifolia* Nuttall. (Fam. *Compositæ*.)

**Part used:** Leaves and flowering tops.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Rocky Mountains, Mexico and California.

**Description:**

*Grindelia cuneifolia* occurs as entire and broken pieces of the leaves and flowering tops. The *stems* measure up to 35 cm. in length and to 2 mm. in diameter, and they are branched. The *nodes* are slightly enlarged. The *leaves* and *branches* are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* varies from pink to purplish brown. The *surface* is finely striated. The *fracture* is uneven. The *outline* is nearly cylindrical. The *leaves* are sessile and clasping. The *blade* is subcordate at the *base*. The *margin* is entire below, serrate above and the entire margin is ciliate. The *apex* is acute. The *outline* is oblong. The *blade* measures 9.7 cm. or less in length and 27 mm. or less in width. The *upper surface* is light green, pitted and slightly impressed. The *under surface* is free of resin and it is slightly wrinkled, and the veins are broad, purple and elevated. The *flowers* are arranged in corymbs. The *bracts* subtending the flowers are entire, clasping and recurved. The *involucro* is 28 mm. or less in width. The *bracts* are resinous, imbricate, and the tips are green and recurved. The *ray flowers* are yellowish, ligulate and pistillate. The *disk flowers* are yellow and perfect. The *disk achenes* are dentate and auriculate and compressed. The *odor* is slightly aromatic. The *taste* is aromatic and bitter.

**Constituents:** Volatile oil, resin, saponin, grindelin, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Grindelie; Dose, 2 mils (30 min.).



### GRINDELIA SQUARROSA

1. Leaf of the stem. 2. Involucre. 3. Ray flowers.

**GRINDELIA (Grindel.) U. S. P.**  
**(3) Grindelia Squarrosa**

**English name:** Grindelia.

**Synonyms:** Broad-leaved Gum Plant.

**Botanical origin:** *Grindelia squarrosa* (Pursh) Dunal.

**Part used:** Dried leaves and flowering tops.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Minnesota to Manitoba, south to Missouri and Texas.

**Description:**

*Grindelia squarrosa* occurs as entire and broken pieces of the leaves and flowering tops. The stems measure up to 30 cm. in length and to 2 mm. in diameter, and they are branched. The nodes are slightly enlarged. The leaves and branches are alternate. The leaves occur at more frequent intervals than in the Nos. 1 and 2. The internodes are only short distances apart. The texture is fibrous. The color varies from grayish to yellowish. The surface is striated. The fracture is uneven. The outline is nearly cylindrical. The leaves are sessile and clasping. The blade is subcordate at the base. The margin is dentate. The apex is obtuse. The outline is oblong. The blade measures 4.5 cm. or less in length and 15 mm. or less in diameter. The upper surface is grayish green and the veins are not prominent. The under surface is pellucid-punctate and the veins are slightly elevated. The flowers are arranged in corymbs. The bracts subtending the flowers are very small and they resemble the leaves. The involucre is 0.5 mm. or less in width and its bracts are linear-lanceolate, the tip subulate and recurved. The ray flowers are yellowish, ligulate and pistillate. The disk flowers are yellowish and perfect. The disk achenes are four-angled and without a border above. The odor is slightly aromatic. The taste is aromatic and bitter.

**Constituents:** Volatile oil, resin, saponin, grindelin, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Grindelie; Dose, 2 mils (30 min.).

## **LOBELIA**

**1, Channeled and winged stems. 2, Mass of leaves, fruits  
and stems. 3, Inflated calyx. 4, Three types of leaves.  
5, Raceme of flowers.**

## **LOBELIA (Lobel.) U. S. P.**

**English name:** Lobelia.

**Synonyms:** Indian Tobacco, Lobelia Herb, Puke-weed.

**Botanical origin:** *Lobelia inflata* Linné. (Fam. *Lobeliaceæ*.)

**Part used:** Leaves and flowering tops.

**Impurities:** Not more than 10 per cent. of stems or other matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Canada and the United States, south to Georgia and Arkansas.

### **Description:**

*Lobelia* occurs as entire and broken pieces of the leaves and flowering tops. The *stems* measure up to 40 cm. in length and to 8 mm. in diameter. They are usually branched. The *nodes* are prominent. The *leaves* and *branches* are alternate. The *internodes* are of variable length. The *texture* is fibrous. The *color* varies from green to purple. The *surface* is channeled, winged and hirsute. The *fracture* is fibrous. The *outline* is angled. The *cortex* and *wood* are thin. The *pith* is large and white. The *leaves* have *petioles* that measure up to 2 mm., or they are sessile. The *blade* is rounded or tapering at the base. The *margin* is crenate. The *apex* is obtuse or acute. The *outline* is ovate-oval or oblong-oval. The *blade* measures up to 5.5 cm. in length and up to 27 mm. in diameter. The *upper surface* varies in color from green to purple and the veins are impressed. The *under surface* varies in color from green to yellow to purple and the veins are prominent. The *flowers* are arranged in racemes. The *bracts* subtending each flower are ovate or ovate-lanceolate. The *pedicels* are slender and they measure up to 5 mm. The *calyx* is united and tubular below; the free portion terminates in five subulate teeth. The *corolla* is united below; the free portion terminates in five acute lobes. The *andræcium* consists of five stamens; their anthers are united and enclose the style. The *gynæcium* consists of one pistil with a two-celled ovary and a two-parted stigma. The *fruit* is a two-celled capsule with numerous reticulate seeds. The *odor* is not characteristic. The *taste* is strongly acrid.

**Constituents:** Alkaloid (lobeline), gum, resin, fixed and volatile oils, etc.

**Dose:** 0.15 Gm. (2½ grains).

### **Preparations:**

Fluidextractum Lobeliæ; Dose, 0.15 mil (2½ min.).  
Tinctura Lobeliæ; Dose, 1 mil (15 min.).

## CATARIA

1, Upper surface of the crenate margined leaf. 2, Under surface showing the venation. 3, Spike of flowers. 4, Seeds. 5, Flowers.

## CATARIA (Catar.) N. F.

**English name:** Catnep.

**Synonyms:** Catmint, Catnip.

**Botanical origin:** *Nepeta Cataria* Linné. (Fam. *Labiatae*.)

**Part used:** Leaves and flowering tops.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 16 per cent.

**Habitat:** Europe; naturalized in North America, from New Brunswick south to Georgia and Kansas.

### Description:

Catnep occurs as a mixture of entire and broken pieces of the leaves and flowering tops. The stems measure up to 6 dm. in length and to 8 mm. in diameter. They are simple and branched. The nodes are enlarged. The leaves are opposite. The internodes are of variable length. The texture is fibrous. The color is grayish green. The surface is hairy and channeled on its four sides. The fracture is fibrous. The outline is quadrangular. The cortex and wood are thin. The pith is large, solid or hollow. The petioles of the leaves measure up to 4 cm. in length. The blade of the larger leaves is cordate, of the smaller upper leaves rounded. The margin is coarsely crenate. The apex is acute. The outline varies from ovate to triangular-ovate. The leaves measure up to 15 cm. in length and the blades to 5.6 cm. in width. The upper surface varies from green to yellowish green and the veins are distinct. The under surface is grayish green; the veins are prominent and hairy. The flowers are arranged in axillary or terminal spikes. The calyx is united, tubular below, indistinctly two-lipped, and five-toothed. The corolla is bilabiate and spotted. The andræcium consists of four stamens, two short and two long. The gynæcium consists of one pistil with a four-celled ovary and a two-cleft style. The fruit consists of four nutlets enclosed in the persistent calyx. The taste is aromatic. The odor is pungent and bitter.

**Constituents:** Volatile and fixed oils, wax, gum, tannin, sugar, bitter principle, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Catariae; Dose, 4 mils (1 fl. dr.).

## **EUPATORIUM**

1, Portion of the stem with leaves and flowers. 2, Under surface of the leaf. 3, Upper surface of the leaf. 4, Head of flowers. 5, Single flower and, to the left, a fruit.

## EUPATORIUM (Eupator.) N. F.

**English name:** Eupatorium.

**Synonyms:** Boneset, Thoroughwort.

**Botanical origin:** *Eupatorium perfoliatum* Linné.  
(Fam. Compositæ.)

**Part used:** Leaves and flowering tops.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** New Brunswick to Manitoba, south to Florida and Texas.

### Description:

*Eupatorium* occurs as broken pieces of the leaves and flowering tops. The *stems* measure up to 6 mm. in diameter. They are simple or branched. The *nodes* are distinct. The *leaves* are opposite; the pairs on the lower portions of the stems unite at their bases, forming connate-perfoliate leaves. The *internodes* are of variable length. The *texture* is fibrous. The *color* is yellowish green. The *surface* is longitudinally striated and hairy. The *fracture* is fibrous. The *outline* is cylindrical and wavy. The *cortex* and *wood* are thin. The *pith* is large and white. The leaves are sessile. The *blade* is connate or cordate at the base. The *margin* is crenate. The *apex* is narrowly acuminate. The *outline* is lanceolate-acuminate. The *blades* of the leaves measure up to 20 dm. in length and to 4.5 cm. in width. The *upper surface* varies in color from green to yellowish green. The *under surface* is yellowish green and hairy, and has numerous yellow, shiny, minute, glandular hairs. The *veins* are yellowish white. The *flowers* are arranged in corymbs. The *involucre* consists of two or three series of lanceolate imbricated greenish gray bracts. No *ray flowers* are present. The *disk flowers* are perfect. The *fruit* is a five-angled achene with a persistent pappus in one row. The *odor* is slightly aromatic. The *taste* is strongly bitter.

**Constituents:** Volatile oil, tannin, resin, coloring matter, wax, glucoside (eupatorin), etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Fluidextractum Eupatorii; Dose, 2 mils (30 min.).

## **HYOSCYAMUS**

1, Leaf from the lower part of the stem. 2, Upper stem leaves. 3, Leaf bract subtending the flower and fruit. 4, Two-celled pyxis. 5, Flowers. 6, Persistent five-toothed calyx inclosing the fruit.

## **HYOSCYAMUS (Hyos.) U. S. P.**

**English name:** Hyoscyamus.

**Synonyms:** Henbane, *Hyoscyami folium* P. I.

**Botanical origin:** *Hyoscyamus niger* Linné. (Fam. *Solanaceæ*.)

**Part used:** Leaves and flowering or fruiting tops.

**Impurities:** None given.

**Assay:** Not less than 0.065 per cent. of alkaloids.

**Ash:** Not more than 30 per cent.

**Habitat:** Europe and parts of Asia; cultivated in United States.

### **Description:**

*Hyoscyamus* occurs as a mixture of entire and broken pieces of the leaves and flowering tops, adhering in masses. The stems measure up to 20 cm. in length and to 4 cm. in diameter. They are simple or branched. The nodes are distinct. The leaves and branches are alternate. The internodes are variable in length. The texture is fibrous. The color varies from gray to brownish green. The surface is rough, hairy and sunken. The fracture is brittle. The outline is irregular. The cortex is green and thin. The wood is thin. The pith is hollow. The leaves have petioles up to 30 cm. in length. The upper leaves are sessile. The blade is inequilateral at the base. The margin has from one to six acute-angled lobes or teeth. The apex is acute. The outline is ovate or oblong. The leaves measure up to 26 cm. in length and the blade up to 28 cm. in width. The upper surface varies in color from dark green to yellowish green. The under surface is grayish green and hairy. The midvein is broad and yellowish on both surfaces; the branches are small and curve upward and outward toward the teeth or lobes. The flowers are in spikes or racemes. The pedicel measures up to 3 mm. The calyx is urn-shaped and five-toothed above. The corolla is yellow-spotted and campanulate; the five lobes are rounded and prominently veined. The andræcium consists of five stamens. The gynæcium consists of one pistil with a two-celled ovary and one style. The fruit is a two-celled pyxis. The seeds are small, biconcave and reticulate. The odor is narcotic. The taste is bitter and acrid.

**Constituents:** Alkaloids (hyoscyamine, hyoscine), resin, fixed oil, choline, etc.

**Dose:** 0.25 Gm. (4 grains).

### **Preparations:**

Extractum *Hyoscyami*; Dose, 0.06 Gm. (1 grain).  
Fluidextractum *Hyoscyami*; Dose, 0.2 mil (3 min.).  
Oleum *Hyoscyami* Compositum N. F. (for external use).  
Tinctura *Hyoscyami*; Dose, 2 mils (30 min.).

## **ABSINTHIUM**

1, Mass of leaves and stems. 2, Large stem. 3, Compound leaf. 4, Panicled raceme of heads.

## **ABSINTHIUM (Absinth.) N. F.**

**English name:** Absinthium.

**Synonyms:** Wormwood.

**Botanical origin:** *Artemisia Absinthium* Linné.  
(Fam. *Compositæ*.)

**Part used:** Leaves and flowering tops.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Europe, Northern Asia, and Africa. Naturalized in the Northeastern United States.

### **Description:**

*Absinthium* occurs as broken pieces of the leaves and flowering tops. The stems measure up to 30 cm. in length and to 6 mm. in diameter. They are simple or branched. The nodes are distinct. The leaves are alternate. The internodes are of variable length. The texture is fibrous. The color is grayish and yellowish green. The surface is canescent. The fracture is fibrous. The outline is cylindrical. The cortex and wood are thin. The pith is hollow. The petioles of the leaves measure up to 2 cm. The upper leaves are frequently sessile. The blade is 1 to 3 times pinnately divided; the ultimate divisions are oblong-lanceolate and obtuse. The margin is divided. The apex of the divisions is obtuse. The leaves measure up to 15 cm. in length and to 14 cm. in width. The upper surface is dark grayish green and canescent. The under surface is light grayish green and canescent; and the midvein of each division is prominent. The flowers are in heads, arranged in panicled racemes. The peduncle is short. The involucre consists of several rows of imbricated bracts; the outer ones are short and the inner have scarious margins. No ray flowers are present. The disk flowers of the margin are pistillate. The fruits are striate and winged achenes, with a persistent disk. The receptacle is convex and pubescent. The odor is aromatic. The taste is pungent and strongly bitter.

**Constituents:** Volatile oil, bitter principles, starch, tannin, succinic acid, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

None.

## **CANNABIS—AMERICAN**

1. Leaves, fruits and small stems. 2. Small branch with  
leaf-like bracts. 3. Part of a broad leaflet.

# CANNABIS (Cannab.) U. S. P.

## (1) American Cannabis

**English name:** Cannabis.

**Synonyms:** American Cannabis.

**Botanical origin:** *Cannabis sativa* Linné. (Fam. *Moraceæ*.)

**Part used:** Flowering tops.

**Impurities:** Not more than 10 per cent. of fruits or other foreign matter.

**Assay:** Biologically assayed.

**Ash:** Not more than 15 per cent.

**Habitat:** Southern United States.

### Description:

American Cannabis occurs as broken pieces of the leaves and flowering tops. The stems are of variable length and they must not measure more than 3 mm. in diameter. The drug of commerce frequently has stems 6 mm. in diameter. They are branched. The nodes are distinct. The branches are alternate. The internodes are of variable length. The texture is fibrous. The color varies from light brown to brownish green. The surface is longitudinally furrowed and covered with short hairs. The fracture is uneven. The outline is wavy. The cortex and wood are thin. The pith is white and porous. The leaves are light green and have petioles which measure 6.5 cm. or less in length. The blade is palmately divided into nine or fewer leaflets. The leaflets are sessile. The base is tapering. The margin is sharply serrate. The apex is acuminate. The veins are pinnate, impressed above, elevated below. The flowers are arranged in short spikes on a peduncle which measures up to 12.5 cm. in length and is of variable width. The bracts or leaves subtending the spikes have (usually) three large and two small leaflets; the bracts subtending the individual flowers, three small leaflets. The flowers have a greenish calyx. The gynæcium has one pistil with a reddish brown, filiform, two-parted style. The fruit is an achene enclosed by the persistent calyx. The odor is aromatic. The taste is pungent and resinous.

**Constituents:** Volatile oil, resin, bitter principle, gum, sugar, potassium nitrate, alkaloids, etc.

**Dose:** None given.

### Preparations:

Extractum Cannabis; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Fluidextractum Cannabis; Dose, 0.1 mil ( $1\frac{1}{2}$  min.).

Tinctura Cannabis; Dose, 0.75 mil (12 min.).

## **CANNABIS—AFRICAN**

1, Portion of a disk composed of the compressed drug. 2, Single stem with flowers, fruits and bracts. 3, Irregular fragment of the drug.

## **CANNABIS (Cannab.) U. S. P.**

### **(2) African Cannabis**

**English name:** Cannabis.

**Synonyms:** African Cannabis.

**Botanical origin:** *Cannabis sativa*, var. *indica*. (Fam. *Moraceæ*.)

**Part used:** Flowering tops.

**Impurities:** Not more than 10 per cent. of fruits or other foreign matter.

**Assay:** Biologically assayed.

**Ash:** Not more than 15 per cent.

**Habitat:** Africa.

#### **Description:**

African Cannabis occurs as broken pieces of the leaves and flowering tops. The stems are of variable length and they must not measure more than 3 mm. in diameter. They are branched. The nodes are distinct and the branches are alternate. The internodes are of variable length. The texture is fibrous. The color is greenish brown. The surface is longitudinally furrowed and short hairy. The fracture is uneven. The outline is wavy. The cortex and wood are thin. The pith is white and porous. The stem leaves are rarely present. The flowers are arranged in short spikes on a peduncle which rarely exceeds 7 cm. in length. The bracts subtending the spikes are divided into five linear leaflets. The bracts subtending the individual flowers usually have three minute leaflets. The flowers have a green calyx. The gynoecium consists of one pistil with a reddish brown two-parted filiform style. The fruit is an achene and is enclosed by the persistent calyx. The odor is aromatic. The taste is pungent and resinous.

**Constituents:** Volatile oil, resin, bitter principle, gum, sugar, potassium nitrate, alkaloids, etc.

**Dose:** None given.

#### **Preparations:**

Extractum Cannabis; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Fluidextractum Cannabis; Dose, 0.1 mil ( $1\frac{1}{2}$  min.).

Tinctura Cannabis; Dose, 0.75 mil (12 min.).

## **CANNABIS--INDIAN**

**1, Large resinous branch. 2, Seed. 3, Small branches without seed. 4, Larger branch.**

## CANNABIS (Cannab.) U. S. P.

### (3) Indian Cannabis

**English name:** Cannabis.

**Synonyms:** Indian Hemp, Guaza, Ganjah.

**Botanical origin:** *Cannabis sativa*, var. *indica*. (Fam. *Moraceæ*.)

**Part used:** Flowering tops.

**Impurities:** Not more than 10 per cent. fruits or other foreign matter.

**Assay:** Biologically assayed.

**Ash:** Not more than 15 per cent.

**Habitat:** East Indies.

#### Description:

Indian Cannabis occurs as broken pieces of leaves and flowering tops. The stems vary in length and they must not exceed 3 mm. in diameter. They are branched. The nodes are distinct. The branches are alternate. The internodes are of variable length. The texture is fibrous. The color is grayish brown. The surface is longitudinally furrowed and short hairy. The fracture is uneven. The outline is wavy. The cortex and wood are thin. The pith is white and porous. Stem leaves are rarely present. The flowers are arranged in short broad spikes on a peduncle which rarely exceeds 7 cm. in length and which is frequently 4.5 cm. wide. The bracts subtending the spikes and flowers are short and the leaflets vary from three to five. The flowers have a grayish green hairy calyx. The gynæcium consists of a single pistil with a reddish brown two-parted filiform style. The fruit is an achene and is enclosed by the persistent calyx. The odor is aromatic. The taste is pungent and resinous.

**Constituents:** Volatile oil, resin, bitter principle, gum, sugar, potassium nitrate, alkaloids, etc.

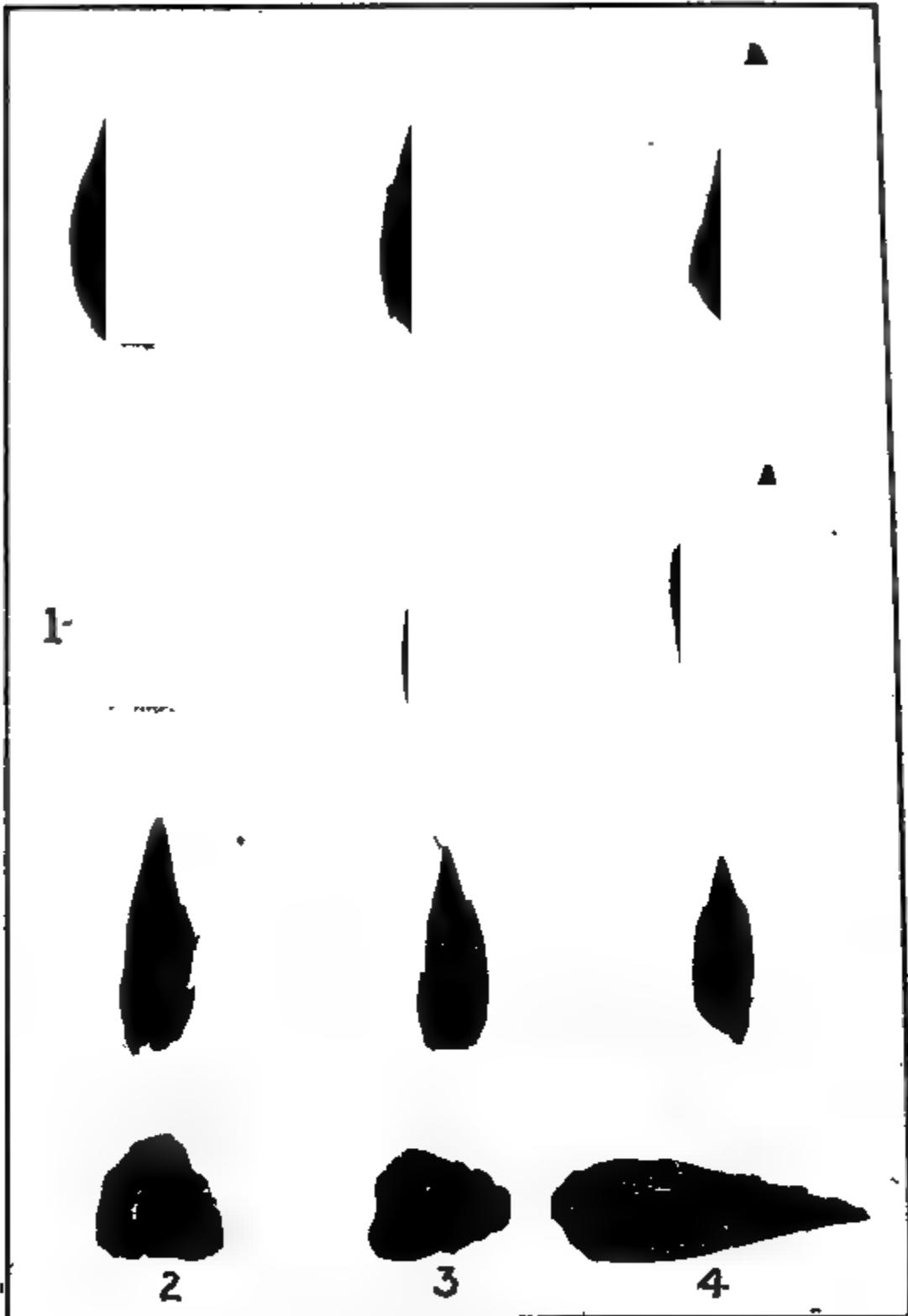
**Dose:**

#### Preparations:

Extractum Cannabis; Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Fluidextractum Cannabis; Dose, 0.1 mil ( $1\frac{1}{2}$  min.).

Tinctura Cannabis; Dose, 0.75 mil (12 min.).



### **POPULI GEMMÆ— BALM OF GILEAD BUDS**

1. Overlapping scales of the bud. 2. Base of the bud. 3. Cross-section of the bud. 4. Longitudinal section of the bud. 5. A very large bud.

# **POPULI GEMMÆ (Pop. Gem.) N. F.**

## **(1) Balm of Gilead Buds**

**English name:** Balsam Poplar Buds.

**Synonyms:** Balm of Gilead Buds.

**Botanical origin:** *Populus balsamifera* Linné. (Fam. *Salicaceæ*.)

**Part used:** Leaf buds.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Northern North America, south to New York and Nevada.

### **Description:**

Balm of Gilead Buds occur as solitary buds and agglutinated masses of buds. These buds are sessile. They measure up to 13 mm. in width and up to 28 cm. in length. The buds are simple or clustered in twos, or in threes occasionally. The *base* is truncate or depressed. The *margin* has projecting points of scales. The *apex* is acute. The *outline* varies from ovate to ovate-lanceolate. The *surface* of the imbricated scales is smooth, and is covered with a thin coat of sticky resin. The *inner surface* is more sticky than the outer. The scales enclose numerous undeveloped leaves. The *color* is reddish brown. The *odor* is balsamic. The *taste* is pungent and bitter.

**Constituents:** Volatile oil, populin, salicin, resin, etc.

**Dose:** None given.

### **Preparations:**

None. Enters into Syrupus Pini Strobi Compositus.

## **POPULI GEMMÆ—BLACK POPLAR BUDS**

1, Mass of buds. 2, Buds of different sizes. 3, Portion  
of the stem.

## **POPULI GEMMÆ (Pop. Gem.) N. F.**

### **(2) Black Poplar Buds**

**English name:** Balsam Poplar Buds.

**Synonyms:** Black Poplar Buds, Willow Poplar Buds.

**Botanical origin:** *Populus nigra* Linné. (Fam. *Salicaceæ*.)

**Part used:** Leaf buds.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe; naturalized in the Delaware River and Hudson River valleys and Staten Island.

#### **Description:**

Black Poplar Buds occur only as solitary buds and never as agglutinated masses. These buds are sessile or short-stalked. They measure up to 6 mm. in width and up to 15 mm. in length. The buds are simple or rarely clustered. The base is truncate. The margin has imbricated projecting scales. The apex is acuminate. The outline is lanceolate. The surface of the imbricated scales is smooth and free of sticky resin. The central scales are slightly sticky. The color varies from yellowish brown to blackish brown. The odor is balsamic. The taste is pungent and bitter.

**Constituents:** Volatile oil, populin, salicin, resin, etc.

**Dose:** None given.

#### **Preparations:**

None. Enters into Syrupus Pini Strobi Compositus.

## CHAPTER XI

### LEAVES

**I**N the study of leaves the following must be considered: Occurrence; petiole,—length, width, etc.; blade,—base, margin, apex, outline, size, upper surface, under surface, texture, odor and taste.

**1. Occurrence.** Leaves usually occur in a broken or partially broken condition, as in mullein; or as entire leaves, as in eucalyptus.

**2. Petiole.** The petioles of leaves vary greatly in the different leaves. In damiana they are slender and short; in matico they are short and thick; in low mallow they are long and slender; in coltsfoot they are very long; some of the leaves have a maximum length of 5.5 dm. In mullein and digitalis the petiole is margined; in coltsfoot the petiole is channeled on the upper surface; in eucalyptus the petiole is frequently twisted; in coltsfoot and marshmallow leaves the petioles are hairy; in most of the leaves the petioles are glabrous (without hairs).

**3. Blade.** (a) The *base* is cordate in matico, farfara and low and high mallow; it is subcordate in marshmallow; rounded, as in boldo; cuneate, as in *uva ursi* and short buchu; tapering, as in digitalis, mullein, eriodictyon and long buchu. (b) The *margin* in eucalyptus, mullein, matico, boldo and *uva ursi* is entire. In buchu, chimaphila, damiana, castanea and eriodictyon it is serrate; in digitalis, dentate; in hamamelis, crenate; and in *malvæ folia*, coltsfoot, stramonium and menyanthes, lobed. (c) The *apex* of long buchu is truncate; of menyanthes and farfara, rounded or obtuse; of stramonium, althæa, digitalis, eriodictyon and short buchu, acute; in eucalyptus, matico and castanea, acuminate. (d) The *outline* of long buchu is oblong-linear; of castanea,

oblong-lanceolate; of eucalyptus, falcate; of boldo, oval; of menyanthes, obovate; of low malva, rotund; and of farfara, reniform. (e) The *upper surface* includes the consideration of the color, the markings and the veins. The color of the upper surface is usually dark green; exceptions occur, however, in a number of leaves: eucalyptus is bluish green; eriodictyon is brown; short buchu is yellowish green. In most leaves this surface is dull, but in buchu, uva ursi and chimaphila the surface is shiny. Most of the leaves are not hairy, but mullein and althaea are very hairy or tomentose. The surface of eriodictyon is shiny from a coat of resin; in matico it is elevated between the veins; in boldo it is papillose; and in short buchu it is pellucid-punctate. The veins are usually not conspicuous on the upper surface. In boldo, chimaphila and althaea the veins are impressed. (f) The *under surface* of most leaves is lighter in color than the upper surface; grayish green is the most common color. In eucalyptus the surface is bluish green; in short buchu, yellow; in coltsfoot, light gray; etc. In most leaves the under surface is dull and smooth; in witch-hazel leaves it is very shiny; in mullein and althaea, densely hairy; in matico the hairs are more abundant on the veins; in damiana and malva the surface is only slightly hairy. The veins are usually elevated more on the under than on the upper surface, and in every leaf their arrangement must be noted. Refer to eucalyptus, to large pilocarpus and to castanea. (g) The *texture* of most leaves is thin and papery, and they are very brittle; in eucalyptus, castanea, witch-hazel, etc., the texture is leathery (coriaceous), and tough. (h) *Odor.* Most leaves are odorless, but stramonium has a narcotic odor; eriodictyon, long and short buchu, matico and eucalyptus are aromatic. (i) Eriodictyon, long and short buchu, matico and eucalyptus have a pungent *taste*; chimaphila, castanea and uva ursi, an astringent taste; mullein and malva leaves, a mucilaginous taste; and menyanthes, farfara and digitalis, a bitter taste.



## EUCALYPTUS

1, Upper surface of the leaf at the left; under surface at the right. 2, An older fruit with the lid removed. 3, Persistent stamen and a central style. 4, Lid of the fruit. 5, Side view of a young fruit.

## **EUCALYPTUS (Eucalypt.) U. S. P.**

**English name:** Eucalyptus.

**Synonyms:** Blue Gum Leaves.

**Botanical origin:** *Eucalyptus Globulus* Labillardière.  
(Fam. *Myrtaceæ*.)

**Part used:** Leaves collected from older parts of the tree.

**Impurities:** Not more than 3 per cent. of stems, fruits or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Australia; cultivated in California and subtropics.

### **Description:**

*Eucalyptus* occurs as a mixture of entire and broken leaves. The *petioles* are twisted, and they measure up to 25 cm. in length. The *blade* is inequilateral, rounded, or tapering at the base. The *margin* is entire. The *apex* is acuminate or acute. The *outline* varies from falcate to oblong-lanceolate. The *blade* measures up to 6 cm. in width and to 33 cm. in length. The *upper surface* and the *lower surface* vary in color from grayish to yellowish or to bluish green, and they are pellucid-punctate. The branches of the midvein unite into one vein, which occurs a short distance from and parallel to the margin of the leaf. The *texture* is coriaceous. The *odor* is aromatic. The *taste* is pungent and bitter.

**Constituents:** Volatile oil, tannin, resins, eucalyptic acid, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Eucalypti; Dose, 2 mils (30 min.).  
Oleum Eucalypti; Dose, 0.5 mil (8 min.).

## **VERBASCI FOLIA**

1, Petiole of leaf. 2, Smaller leaf, the surface tomentose.  
3, Very small leaf.

## **VERBASCI FOLIA (Verbasc. Fol.) N. F.**

**English name:** Mullein Leaves.

**Synonyms:** Common Mullein, Velvet or Mullein Dock.

**Botanical origin:** *Verbascum Thapsus* Linné and other species of *Verbascum*. (Fam. *Scrophulariaceæ*.)

**Part used:** Leaves.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 14 per cent.

**Habitat:** Europe; naturalized in North America, south to Florida and Kansas.

### **Description:**

Mullein Leaves occur as a mixture of entire and broken pieces of the leaves. No petioles are present, although the constricted blade resembles a petiole. The blade is tapering at the base. The margin is entire. The apex is acute or obtuse. The outline varies from oblong-lanceolate to ovate to oblong. The blades measure 36 cm. or less in length and 12 cm. or less in width. The upper surface is tomentose, and it varies in color from yellowish to greenish gray; the veins are not seen on account of the long hairs. The under surface is similar to the upper surface. The texture is hairy. The odor is not distinct. The taste is bitter, mucilaginous and irritating on account of the hairs.

**Constituents:** Volatile oil, wax, resin, tannin, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Verbasci Folie; Dose, 4 mil (1 fl. dr.).

## MATICO

1, Folded leaf. 2, Under surface of the leaf. 3, Flower spike. 4, A piece of stem and, above, the upper surface of the leaf.

## MATICO (Matic.) N. F.

**English name:** Matico.

**Synonyms:** Matico Leaves.

**Botanical origin:** *Piper angustifolium* Ruiz et Pavon.  
(Fam. *Piperaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of stems, flowers, spikes or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 18 per cent.

**Habitat:** Mountains of Peru, Bolivia and Brazil.

### Description:

Matico occurs as a mixture of entire, broken and folded leaves. The petioles are stout and they measure up to 6 mm. in length. The blade is inequilateral and cordate at the base. The margin is entire. The apex is acuminate. The outline is oblong-lanceolate. The blade measures up to 25 cm. in length and to 6 cm. in width. The upper surface is cancellate; the veins are not distinct and the color varies from dark green to yellowish green. The under surface is bullate; the veins are pubescent, parallel and reticulate. The odor is aromatic. The taste is pungent, resembling pepper.

**Constituents:** Tannin, volatile oil, bitter principle, resin, mucilage, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Matico; Dose, 4 mils (1 fl. dr.).

## **BOLDO**

1, Broad leaf with deeply impressed veins. 2, Coarsely papillose upper surface. 3, Stem. 4, Fruit. 5, Flower buds.

## BOLDO N. F.

**English name:** Boldo.

**Synonyms:** Boldo Leaves.

**Botanical origin:** *Boldu* *Boldus* (Molina) Lyons.  
(Fam. *Monimiaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 2 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Mountain regions of Chile.

**Description:**

Boldo occurs as a mixture of entire and broken leaves. The petiole is stout, and it measures up to 6 mm. in length. The blade is rounded or subcordate at the base. The margin is entire and revolute. The apex is rounded or notched. The outline varies from ovate-oval to oblong-ovate. The blade measures up to 7.5 cm. in length and up to 5.2 cm. in width. The upper surface is coarsely papillose, and it varies in color from greenish yellow to grayish green, and the veins are deeply impressed. The under surface varies in color from grayish green to yellowish green, and the veins are reticulate and prominent. The texture is coriaceous. The odor is aromatic. The taste is pungent and it resembles oil of wormseed.

**Constituents:** Tannin, resinous compounds, volatile oil, alkaloid (boldine), etc.

**Dose:** 0.5 Gm. (8 grains).

**Preparations:**

Fluidextractum Boldi; Dose, 0.5 mil (8 min.).



2



4



3

### UVA URSI

1, Branched stem. 2, Several leaves of variable outline and size. 3, Branch with leaves and flowers. 4, Single flower. 5, Fruit.

## **UVA URSI U. S. P.**

**English name:** Uva Ursi.

**Synonyms:** Bearberry.

**Botanical origin:** *Arctostaphylos Uva-ursi* (Linné)  
Sprengel. (Fam. *Ericaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of stems or  
other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Asia, Europe, North America south to Penn-  
sylvania and California.

### **Description:**

*Uva ursi* occurs as a mixture of entire and broken leaves. The *petioles* are thick and they measure up to 6 cm. in length. The *blade* is cuneate at the base. The *margin* is entire and revolute. The *apex* is rounded, obtuse or acute. The *outline* varies from spatulate to oblong-spatulate to obovate. The *blade* measures up to 30 mm. in length and to 15 mm. in width. The *upper surface* is smooth and shiny; it varies in color from yellowish green to grayish green; the veins are slightly impressed, and this gives the surface a reticulate appearance. The *under surface* is yellowish green and reticulate. The *texture* is coriaceous. The *odor* is not distinct. The *taste* is astringent.

**Constituents:** Glucosides (arbutin, ericolin), volatile oil, urson, fat, gum, coloring matter, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Uvae Ursi; Dose, 2 mils (30 min.).

## **BUCHU—SHORT**

1, Leaves and small stems. 2, Several leaves of variable size. 3, Top view of fruit with seeds removed. 4, Under view of fruit. 5, Seed. 6, Stems.

## **BUCHU U. S. P.**

### **(1) Short Buchu**

**English name:** Buchu.

**Synonyms:** Short Buchu.

**Botanical origin:** *Barosma betulina* (Thunberg) Bartling and Wendland. (Fam. *Rutaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 4 per cent.

**Habitat:** South Africa.

#### **Description:**

Short Buchu occurs as a mixture of broken and entire leaves, stems, and fruits, and occasionally flowers. The petioles are stout, and they measure 2 mm. or less in length. The blade is cuneate at the base. The margin is finely serrate, and at the base of each tooth there is an oil gland. The apex is obtuse or broadly acute, and it is bent back toward the under surface. The outline varies from obovate to oval to rotund-cuneate. The blade measures 26 mm. or less in length and 21 mm. or less in width. The upper surface is papillose and yellowish green in color; the veins are prominent. The under surface is papillose, wrinkled and pellucid-punctate; the color is yellowish green. The texture is coriaceous. The odor is aromatic and like mint. The taste is pungent.

**Constituents:** Gum, resin, volatile oil, mucilage, glucosides, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Elixir Buchu N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Buchu Compositum N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Buchu et Potassii Acetatis N. F.; Dose, 4 mils (1 fl. dr.).

Fluidextractum Buchu; Dose, 2 mils (30 min.).

Fluidextractum Buchu Compositum N. F.; Dose, 2 mils (30 min.).

## **BUCHU—LONG**

1, Leaves and small stems. 2, Leaves of variable size. 3,  
Partially developed fruit. 4, Seed. 5, Stems. 6, Flower.

## **BUCHU U. S. P.**

### **(2) Long Buchu**

**English name:** Buchu.

**Synonyms:** Long Buchu.

**Botanical origin:** *Barosma serratifolia* (Curtis) Willdenow. (Fam. Rutaceæ.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 4 per cent.

**Habitat:** South Africa.

#### **Description:**

Long Buchu occurs as a mixture of entire and broken pieces of the leaves and stems. The petioles are stout and they measure 2 cm. or less in length. The blades are tapering at the base. The margin is finely serrate and a gland occurs at the base of each tooth. The apex is truncate or obtuse and glandular. The outline varies from linear-lanceolate to oblong-linear-lanceolate. The blades measure 4 cm. or less in length and 10 mm. or less in width. The upper surface varies in color from dark green to yellowish green. The under surface is grayish green and pellucid-punctate; the midvein is prominent. The texture is brittle and coriaceous. The odor is aromatic and mint-like. The taste is pungent.

**Constituents:** Gum, resin, volatile oil, mucilage, glucosides, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Elixir Buchu N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Buchu Compositum N. F.; Dose, 4 mils (1 fl. dr.).

Elixir Buchu et Potassii Acetatis N. F.; Dose, 4 mils (1 fl. dr.).

Fluidextractum Buchu; Dose, 2 mils (30 min.).

Fluidextractum Buchu Compositum N. F.; Dose, 2 mils (30 min.).



## CHIMAPHILA

1. Stem with many leaves. 2. Three leaves of variable size.  
3. Side and surface view of fruits.

## **CHIMAPHILA (Chimaph.) N. F.**

**English name:** Chimaphila.

**Synonyms:** Prince's Pine, Pipsissewa.

**Botanical origin:** *Chimaphila umbellata* (Linné) Barton. (Fam. *Ericaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Europe, Asia, North America.

### **Description:**

Chimaphila occurs as a mixture of entire and broken pieces of the leaves, stems, flowers and fruits. The petioles are thick, and they measure up to 7 mm. in length. The blade is cuneate at the base. The margin of the cuneate portion is entire, of the upper portion sharply serrate. The teeth are more prominent when viewed from the under surface. The apex is acute or obtuse. The outline varies from oblanceolate to obovate-cuneate. The blade measures up to 5.5 cm. in length and to 17 mm. in width. The upper surface is smooth, shiny and dark green; the veins are slightly impressed. The under surface is smooth, dull and yellowish green or gray green; the veins are prominent. The texture is coriaceous. The odor is not distinct. The taste is astringent.

**Constituents:** Crystalline principles (chimaphilin, arbutin, etc.), tannin, volatile oil, fat, resin, starch, gum, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Chimaphilæ; Dose, 2 mils (30 min.).



### DAMIANA—*TURNERA DIFFUSA*

1, Stem with clusters of leaves. 2, Cluster of leaves. 3, Leaves of variable size. 4, Flower.

## **DAMIANA N. F.**

### **(1) Turnera Diffusa**

**English name:** Damiana.

**Synonyms:** Turnera.

**Botanical origin:** *Turnera diffusa* Willdenow. (Fam. *Turneraceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems and other parts of the same plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Southern Texas, Lower California to South America.

#### **Description:**

*Turnera diffusa* occurs as broken or as cut pieces of the stems, leaves and flowers. The size is variable. The nodes are alternate. The internodes are of variable length. The texture is woody. The color varies from yellowish to grayish purple or brown. The surface is usually non-striated and the smallest and larger twigs are tomentose. The fracture is uneven. The cortex, wood and pith are not distinct. The leaves are nearly sessile. The blade is cuneate at the base. The margin is sharply serrate and the margin of the teeth is revolute. The apex is rounded. The outline varies from oblong-oval to spatulate. The leaf varies in size from 16 mm. or less in length to 7 mm. or less in width. The upper surface varies in color from yellow to grayish brown and it is tomentose. The veins are impressed and each branch of the midvein ends in a sinus. The under surface is light grayish yellow and tomentose. The midvein is elevated and two to three times as broad as in *Turnera aphrodisiaca*. The branches of the midvein are slightly elevated.

**Constituents:** Volatile oil, bitter principle (damanin), resin, tannin, sugar, gum, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Damianæ; Dose, 2 mils (30 min.).

## **DAMIANA—TURNERA APHRODISIACA**

1, Leaves, stems and fruits. 2, Stem with clusters of leaves. 3, Leaves of variable size. 4, Fruit and seeds. 5, Flower.

## DAMIANA N. F.

### (2) *Turnera Aphrodisiaca*

**English name:** Damiana.

**Synonyms:** *Turnera*.

**Botanical origin:** *Turnera aphrodisiaca* Ward. (Fam. *Turneraceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems and other parts of the same plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Southern Texas to Northern South America.

#### **Description:**

*Turnera aphrodisiaca* occurs as broken or as cut pieces of the stems, leaves and flowers. The size is variable. The nodes are alternate. The internodes are of variable length. The texture is woody. The color is reddish brown. The surface is striated, the smallest twigs are very hairy, while the larger twigs are nearly glabrous. The fracture is uneven. The cortex, wood and pith are not distinctive. The leaves are nearly sessile. The blade is cuneate at the base. The margin is sharply serrate and the margin of the teeth is revolute. The apex is acute. The outline varies from oblong-lanceolate to obovate. The leaf varies in size from 3 cm. or less in length to 8 mm. or less in width. The upper surface varies in color from gray to dark green. There are no characteristic markings and the surface is nearly glabrous. The veins are impressed. The midvein is sinuous and each branch of the midvein ends in a sinus. The under surface is lighter than the upper surface and it is slightly glandular. The midvein is strongly elevated while the branches are less so. The flowers are seldom present. The fruit consists of a three-parted capsule. The capsules frequently contain many yellow crescent-shaped seeds constricted at one end. The surface of the seeds is ribbed, and between the ribs the surface is reticulate. The odor is aromatic, and resembles the odor of strawberries. The taste is pungent.

**Constituents:** Volatile oil, bitter principle (diamin), resin, tannin, sugar, gum, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Damiane: Dose, 2 mils (30 min.).

## **CASTANEA**

**1.** Stem and folded leaf. **2.** Base of leaf. **3.** Flower cluster. **4.** Coarsely serrate margin of the leaf.

## **CASTANEA (Castan.) N. F.**

**English name:** Castanea.

- **Synonyms:** Chestnut Leaves.

**Botanical origin:** *Castanea dentata* (Marshall) Borkhausen. (Fam. *Fagaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of twigs or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Maine to Michigan, south to Georgia and Alabama.

### **Description:**

*Castanea* occurs as a mixture of entire and broken pieces. The *petioles* measure up to 10 cm. in length. The *blade* is tapering and slightly rounded at the *base*. The *margin* is coarsely serrate. The *apex* is acuminate. The *outline* varies from oblong-lanceolate to elliptic-lanceolate. The *leaves* measure up to 34 cm. in length and the *blade* to 11 cm. in width. The *upper surface* is smooth, and the color varies from dark green to yellowish green. The *under surface* is grayish green. The *veins* are pinnate and each large branch of the midvein ends in a tooth. The *texture* is coriaceous. The *stems* are simple and of variable size. The *surface* is striated. The *nodes* are distinct. The *leaves* are alternate. The *texture* is fibrous. The *color* is dark green. The *surface* is striated. The *fracture* is woody. The *outline* is cylindrical. The *cortex* is thin. The *wood* is thick and radiate. The *odor* of chestnut is not distinct. The *taste* is astringent.

**Constituents:** Tannin, fat, gum, resin, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Castaneæ; Dose, 4 mils (1 fl. dr.)

## **ERIODICTYON**

1, Leaf with involute margins. 2, Under surface of the leaf.  
3, Serrate margin. 4, Stems.

## **ERIODICTYON (Eriodict.) U. S. P.**

**English name:** Eriodictyon.

**Synonyms:** Yerba Santa, Consumptive's Weed, Mountain Balm.

**Botanical origin:** *Eriodictyon californicum* (Hooker and Arnott) Greene. (Fam. *Hydrophyllaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** California, south to Mexico.

### **Description:**

Eriodictyon occurs as broken pieces of the leaves and stems. The petioles are stout, purplish brown and channeled; they measure 7 mm. or less in length. The blade is involute and tapering at the base. The margin is unequally serrate and involute, and the edges frequently touch. The apex is acute. The outline varies from lanceolate to oblong-lanceolate. The blades measure 11 cm. or less in length and 25 mm. or less in diameter. The upper surface is yellowish brown in color and covered with a coat of shiny resin; the veins are slightly impressed. The under surface varies in color from yellowish white to greenish yellow; the veins are prominent. The surface between the veins is tomentose. The texture is coriaceous, easily broken. The odor is aromatic. The taste is pungent, bitter and sweet.

**Constituents:** Volatile oil, glucose, resin, acid, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Elixir Eriodictyi Aromaticum N. F.; Dose, 4 mils (1 fl. dr.).

Fluidextractum Eriodictyi; Dose, 1 mil (15 min.).

Syrupus Eriodictyi Aromaticus N. F.; Dose, 8 mils (2 fl. drs.).

## **DIGITALIS**

1, Under surface of the leaf. 2, Upper surface of the leaf.  
3, Flower showing stamens. 4, Flower bud. 5, Five  
stamens and the pistil. 6, Developing ovary.

## DIGITALIS (Digit.) U. S. P.

**English name:** Digitalis.

**Synonyms:** Foxglove, Digitalis folium P. I.

**Botanical origin:** *Digitalis purpurea* Linné. (Fam. *Scrophulariaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 2 per cent. of stems, flowers or other foreign matter.

**Assay:** B.A.—Minimum lethal dose should not be greater than 0.006 mil of tincture for each Gm. of frog.

**Ash:** Not more than 15 per cent.

**Habitat:** Europe; naturalized in Oregon, Washington and elsewhere.

### Description:

Digitalis occurs as a mixture of broken and entire pieces of the leaves, stems and flowers. The *petioles* are winged and measure up to 3 cm. in width; the upper leaves are sessile. The *blade* is tapering abruptly at the *base* into the petiole. The *margin* is dentate. The *apex* is acute. The *outline* varies from ovate to ovate-lanceolate. The leaves measure up to 3 dm. in length, the blade to 11.5 cm. in width. The *upper surface* is dark green, slightly hairy, and the veins are reticulate and distinctly hairy. The *under surface* is grayish green, pubescent, and the veins are hairy, elevated and brown. The *texture* is papery. The *odor* is slight. The *taste* is strongly bitter.

**Constituents:** Glucosides (digitoxin and digitalin, digitonin, etc.), oil, starch, sugar, resin, pectin, acids, etc.

**Dose:** 0.06 Gm. (1 grain).

### Preparations:

Fluidextractum Digitalis; Dose, 0.05 mil (1 min.).

Infusum Digitalis; Dose, 4 mils (1 fl. dr.).

Pilulæ Digitalis, Scillæ et Hydrargyri N. F.; Dose, 1 pill.

Tinctura Digitalis; Dose, 0.5 mil (8 min.).

## **HAMAMELIDIS FOLIA**

1, Under surface of the leaf. 2, Upper surface of the leaf. 3, Longitudinal section of the fruit. 4, Stem. 5, Flowers.

## **HAMAMELIDIS FOLIA (Hamamel. Fol.) N. F.**

**English name:** Hamamelis Leaves.

**Synonyms:** Witch Hazel Leaves.

**Botanical origin:** *Hamamelis virginiana* Linné. (Fam. *Hamamelidaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** New Brunswick to Nebraska, south to Florida and Texas.

### **Description:**

Hamamelis Leaves occur as a mixture of entire and broken flat or folded leaves. The *petioles* measure up to 9 mm. in length. The *base* is inequilateral, one side tapering, the other rounded, less frequently cordate. The *margin* is crenate, or the lower portion is entire. The *apex* is rounded, acute, or acuminate. The *outline* varies from orbicular-oval to obovate. The *leaves* measure up to 14 cm. in length and the blade up to 10.5 cm. in width. The *upper surface* is dull dark green, and the veins are distinct. The *under surface* is shiny, and yellowish or grayish or pinkish green, and the veins are prominent. The *texture* is coriaceous. Stems, flowers and fruits are sometimes present. The *stems* are woody, branched and light green. The *flowers* have a *calyx* of four reflexed sepals, a *corolla* of four ligulate yellow petals, an *andracium* of four stamens, a *gynacium* of one pistil, with two one-celled carpels united at the base, and a two-parted *style*. The *fruit* is a beaked two-celled capsule, each cell with a hard, shiny seed. The *odor* is not distinct. The *taste* is astringent.

**Constituents:** Tannin, bitter principle, volatile oil, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Hamamelidis Foliorum; Dose, 2 mils (30 min.).

## **MALVÆ FOLIA—LOW MALLOW**

1. Under surface of the leaf showing the lobed and crenate-dentate margin. 2. Sinus of a lobe. 3. The brown fungus growths of *Puccinia malvacearum*. 4. Petal. 5. Sepal. 6. Fruit and persistent calyx.

## **MALVÆ FOLIA (Malv. Fol.) N. F.**

### **(1) Low Mallow**

**English name:** Mallow Leaves.

**Synonyms:** Low Mallow, Cheeses.

**Botanical origin:** *Malva rotundifolia* Linné. (Fam. *Malvaceæ*.)

**Part used:** Leaves.

**Impurities:** Reject leaves showing brown fungous growths of *Puccinia Malvacearum* Montagne.

**Assay:** None given.

**Ash:** Not less than 16 per cent.

**Habitat:** Europe and Asia; naturalized in North America.

#### **Description:**

Low Mallow occurs as a mixture of entire and broken pieces of the leaves, flowers and fruits. The *petiole* is hairy and measures 9 cm. or less in length and 2 mm. or less in width. The *blade* is cordate at the *base*. The *margin* has as many as nine lobes, and it is crenate-dentate. The *apex* of each lobe ends in a broad tooth. The *outline* varies from orbicular to reniform. The *blade* measures 6 cm. or less in length and 9 cm. or less in width. The *upper surface* varies in color from dark green to yellowish green; the veins are indistinct. The *under surface* is light green or yellowish green; the veins are palmate and elevated. The *texture* is papery. The *odor* is not distinct. The *taste* is mucilaginous.

**Constituents:** Pectin, tannin, coloring matter, etc.

**Dose:** None given.

#### **Preparations:**

None.

**MALVAE FOLIA—HIGH MALLOW**

1. Under surface of the lobed and palmately veined leaf.
2. Sinus. 3. Several flower buds. 4. Fruit and persistent calyx.
5. Petal. 6. Outer surface of the persistent calyx.

## **MALVÆ FOLIA (Malv. Fol.) N. F.**

### **(2) High Mallow**

**English name:** Mallow Leaves.

**Synonyms:** High Mallow.

**Botanical origin:** *Malva sylvestris* Linné. (Fam. *Malvaceæ*.)

**Part used:** Leaves.

**Impurities:** Reject leaves showing brown fungous growths of *Puccinia Malvacearum* Montagne.

**Assay:** None given.

**Ash:** Not more than 16 per cent.

**Habitat:** Europe; naturalized in North America, British America to Mexico.

#### **Description:**

High Mallow occurs as a mixture of entire and broken leaves, flowers and fruits. The *petioles* of the leaves measure 3 cm. or less in length. The *blade* is cordate at the base. The *margin* is three- to seven-lobed and crenate-dentate. The *apex* of each lobe ends in a large tooth. The *outline* varies from reniform to orbicular. The *blade* measures 11 cm. or less in length and 12 cm. or less in width. The *upper surface* is slightly hairy and varies in color from dark green to yellowish green; the veins are palmate, distinct, and slightly elevated. The *under surface* is pubescent and yellowish or brownish green in color; the veins are elevated. The *texture* is herbaceous. The *odor* is not distinct. The *taste* is mucilaginous.

**Constituents:** Pectin, tannin, coloring matter, etc.

**Dose:** None given.

#### **Preparations:**

None.

## **ALTHÆÆ FOLIA**

**1.** Mass of folded wrinkled leaves. **2.** Entire leaf showing the lobed and doubly serrate margin. **3.** Under surface of a smaller leaf. **4.** Flower buds.

## **ALTHÆÆ FOLIA (Althæ. Fol.) N. F.**

**English name:** Althæa Leaves.

**Synonyms:** Marsh Mallow Leaves, White Mallow.

**Botanical origin:** *Althæa officinalis* Linné. (Fam. *Malvaceæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 16 per cent.

**Habitat:** Europe and Asia; naturalized in salt marshes from Massachusetts to New Jersey.

### **Description:**

Marsh Mallow Leaves occur as a mixture of entire and broken pieces of the leaves, stems and flowers. The *petioles* are stout and they measure 15 mm. or less in length. The *blade* is rounded or subcordate at the *base*. The *margin* is lobed and doubly serrate-dentate. The *apex* is acute. The *outline* varies from ovate-lanceolate to broadly ovate. The *blades* measure 12 cm. or less in length and 10 cm. or less in width. The *upper surface* is yellowish gray and pubescent; the veins are slightly impressed. The *under surface* is yellowish gray and pubescent; the principal veins are elevated. The *texture* is hairy. The *odor* is not distinct. The *taste* is slightly mucilaginous.

**Constituents:** Mucilage, asparagin, sugar, starch, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Enters into Species Emollientes.

## **FARFARA**

1, Portion of the petiole. 2, Under surface showing the prominent veins and slight lobes. 3, Small reddish brown teeth. 4, A folded and broken leaf.

## FARFARA (Farfar.) N. F.

**English name:** Coltsfoot.

**Synonyms:** Coltsfoot Leaves, Tussilago Leaves.

**Botanical origin:** *Tussilago Farfara* Linné. (Fam. *Compositæ*.)

**Part used:** Leaves.

**Impurities:** Not more than 5 per cent. of other parts of the plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 20 per cent.

**Habitat:** Europe and Northern Asia; naturalized in Nova Scotia, south to New York and Minnesota.

### Description:

Coltsfoot occurs as a mixture of entire, broken and folded leaves. The petiole is pubescent, channeled, and up to 36 cm. in length. The blade is cordate at the base; the margin is angulately lobed and dentate; the teeth are reddish brown. The apex is blunt. The outline varies from orbicular to broadly reniform. The blade measures up to 19 cm. in length and to 20 cm. in diameter. The upper surface is dull; the color varies from dark green to yellowish green, and the veins are not distinct. The under surface is white, tomentose, and has up to ten palmate veins of a yellowish brown or purplish brown color. The odor is not distinct. The taste is bitter.

**Constituents:** Bitter principle, glucoside, tannin, resin, saponin, volatile oil, wax, caoutchouc, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

None.

## **STRAMONIUM**

**1.** Lacinately lobed and toothed margin. **2.** Fragment of stem. **3.** Spiny fruit. **4.** Flower split to show the five stamens. **5.** Solitary flower.

## **STRAMONIUM (Stramon.) U. S. P.**

**English name:** Stramonium.

**Synonyms:** Jimson Weed, Thorn Apple Leaves.

**Botanical origin:** *Datura Stramonium* Linné or *Datura Tatula* Linné. (Fam. Solanaceæ.)

**Part used:** Leaves.

**Impurities:** Not more than 10 per cent. of stems or other foreign matter.

**Assay:** Not less than 0.25 per cent. of total alkaloids.

**Ash:** Not more than 20 per cent.

**Habitat:** Asia; naturalized in North America.

### **Description:**

Stramonium occurs as a mixture of entire and broken leaves, stems, flowers and fruits. The petioles measure up to 2 cm. in length. The blade is rounded, truncate, or tapering, and inequilateral at the base. The margin is lacinately lobed and toothed. The apex is acute. The outline varies from ovate to lanceolate. The blade measures up to 30 cm. in length and to 20 cm. in width. The upper surface is dark green and smooth, and the veins are distinct. The under surface varies from light green to yellowish green, and the veins are elevated, brown and hairy. The texture is papery. The odor is narcotic. The taste is salty and bitter.

**Constituents:** Potassium nitrate, fixed oil, gum, chlorophyl, alkaloids (hyoscyamine, atropine), resin, proteids, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Extractum Stramonii (pilular); Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Extractum Stramonii (powdered); Dose, 0.01 Gm. ( $\frac{1}{6}$  grain).

Tinctura Stramonii; Dose, 0.5 mil (8 min.).

Unguentum Stramonii (from extract).

## **MENYANTHES**

1. Trifoliate leaf. 2. Entire margin of the leaflet. 3. Cluster of flowers. 4. Single flower.

## MENYANTHES (Menyanthes) N. F.

**English name:** Menyanthes.

**Synonyms:** Bogbean, Buckbean, Marsh Trefoil.

**Botanical origin:** *Menyanthes trifoliata* Linné. (Fam. *Gentianaceæ*.)

**Part used:** Leaves.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not less than 10 per cent.

**Habitat:** Europe and Asia; North America, south to Pennsylvania and California.

### Description:

*Menyanthes* occurs as a mixture of entire and broken leaves. The leaves are trifoliate. The *petioles* are broad, flat and striated, and they measure up to 17 cm. in length. The *leaflets* have short petioles or are sessile. The *blades* are cuneate at the *base*. The *margin* is entire. The *apex* is obtuse or acute. The *outline* is obovate. The leaflets measure up to 8 cm. in length and to 4 cm. in width. The *upper surface* varies in color from yellowish to brownish green, and the veins are yellowish and elevated. The *odor* is not distinct. The *taste* is strongly bitter.

**Constituents:** Menyanthin (glucoside) and meliatin.  
Not fully investigated.

**Dose:** 1 Gm. (15 grains).

### Preparations:

None.

## **PILOCARPUS—LARGE-LEAVED**

1, Upper surface of the leaf showing the large and small veins parallel to the margin. 2, Under surface of the leaf with elevated central vein and emarginate apex. 3, Small leaf. 4, Portions of stem.

# **PILOCARPUS (Pilocarp.) U. S. P.**

## **(1) Large-leaved Pilocarpus**

**English name:** Pilocarpus.

**Synonyms:** Large-leaved Jaborandi, Pernambuco Jaborandi.

**Botanical origin:** *Pilocarpus Jaborandi* Holmes.  
(Fam. *Rutaceæ*.)

**Part used:** Leaflets.

**Impurities:** Not more than 5 per cent. of stalks bearing the leaflets and stems of the same plant, or other foreign matter.

**Assay:** Not less than 0.6 per cent. of alkaloids.

**Ash:** Not more than 7 per cent.

**Habitat:** Brazil.

### **Description:**

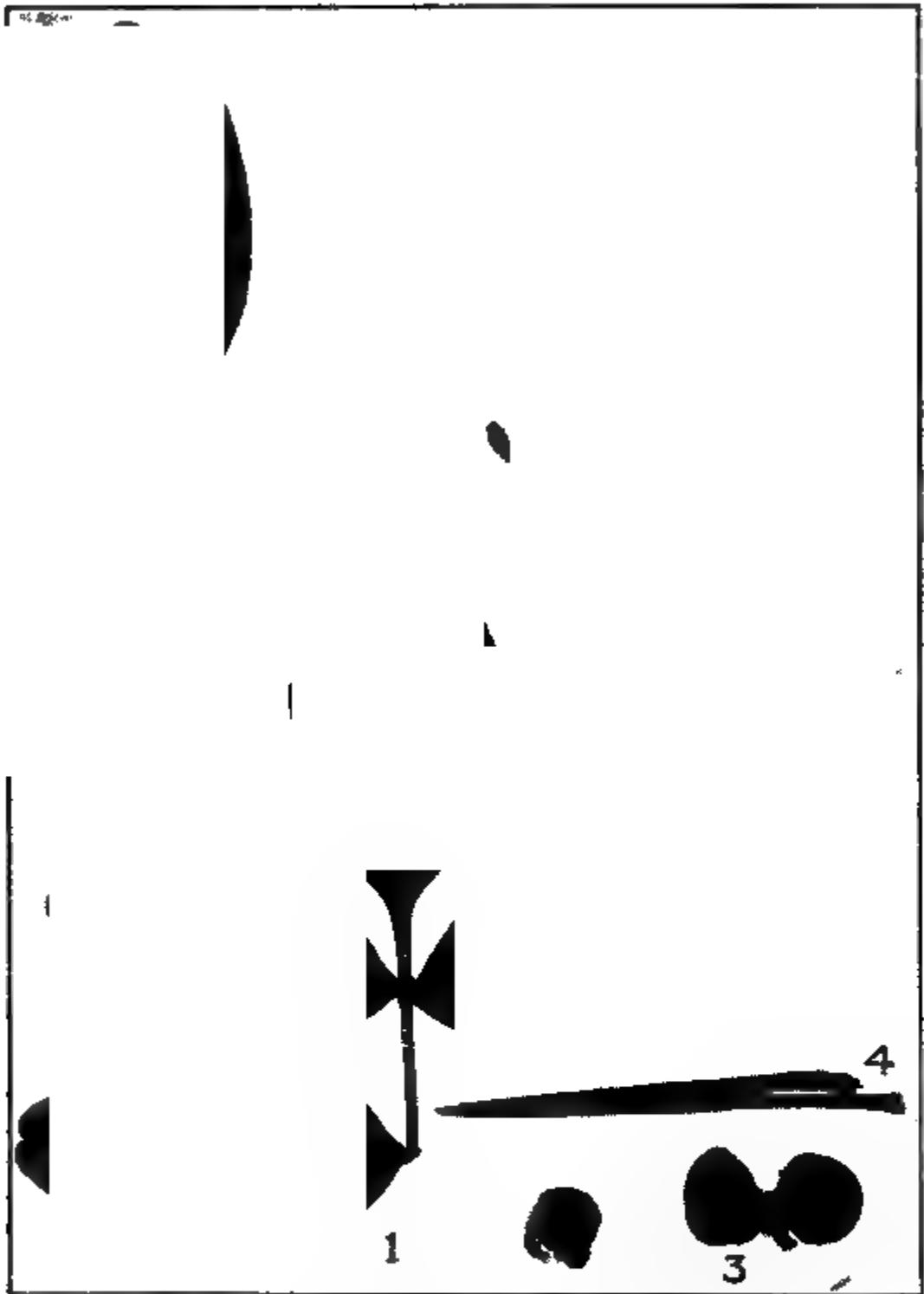
Large-leaved Pilocarpus occurs as a mixture of entire and broken pieces of the leaflets, stalks and stems. The leaves are compound. The *petiolules* of the leaflets are stout and they measure up to 8 mm. in length. The *blades* are inequilateral, tapering and rounded or acute at the base. The *margin* is entire and slightly revolute. The *apex* is slightly tapering and emarginate. The *outline* varies from oblong to oblong-oval. The *blade* has a maximum length of 15 cm. and a width of 4.5 cm. The *upper surface* is yellowish green, smooth, and the veins are elevated. The branches of the midvein meet to form a large inner and a small outer wavy vein, which runs parallel to the margin. The *under surface* is yellowish green, dull; the midvein is large and elevated and its branches are elevated. The *odor* is slight. The *taste* is salty and bitter.

**Constituents:** Alkaloids (pilocarpine, etc.), volatile oil, resin, tannin, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Fluidextractum Pilocarpi; Dose, 2 mils (30 min.).



### PILOCARPUS—SMALL-LEAVED

1. Part of a compound leaf with four leaflets. 2. Leaves of variable form and size. 3. Two fruits. 4. Portion of stem.

## **PILOCARPUS (Pilocarp.) U. S. P.**

### **(2) Small-leaved Pilocarpus**

**English name:** Pilocarpus.

**Synonyms:** Small-leaved Jaborandi, Maranham Jaborandi.

**Botanical origin:** *Pilocarpus microphyllus* Stapf.  
(Fam. *Rutaceæ*.)

**Part used:** Leaflets.

**Impurities:** Not more than 5 per cent. of stalks bearing the leaflets and stems of the same plant or other matter.

**Assay:** Not less than 0.6 per cent. of alkaloids.

**Ash:** Not more than 7 per cent.

**Habitat:** Brazil.

#### **Description:**

Small-leaved Pilocarpus occurs as a mixture of entire and broken pieces of the leaflets. The *petiolules* of the terminal leaflet are margined and they measure up to 5.5 cm. in length. The lateral leaflets are sessile. The *blade* of the terminal leaflet is equilateral, rounded and tapering into the petiolule; the base of the lateral leaflets is inequilateral, tapering and rounded. The *margin* is entire and slightly revolute. The *apex* is tapering and emarginate. The *outline* varies from obovate to oval. The *leaflets* measure up to 5 cm. in length and to 2.2 cm. in width. The *upper surface* varies in color from grayish to yellowish green, and the veins are not elevated. The *under surface* is grayish or yellowish green, dull, and the veins are elevated. The *texture* is coriaceous. The *odor* is slight. The *taste* is salty and bitter.

**Constituents:** Alkaloids (pilocarpine, etc.), volatile oil, resin, tannin, etc.

**Dose:** 2 Gm. (30 grains).

#### **Preparations:**

Fluidextractum Pilocarpi; Dose, 2 mils (30 min.).

## **SENNA—INDIA**

1. Three leaflets. 2. Compound leaf with six leaflets. 3.  
Five leaves of variable size and shape. 4. Fruit (pod). 5.  
Flower and two flower buds.

## **SENNA (Senn.) U. S. P.**

### **(1) India Senna**

**English name:** Senna.

**Synonyms:** India Senna, Tinnevelly Senna.

**Botanical origin:** *Cassia angustifolia* Vahl. (Fam. *Leguminosæ*.)

**Part used:** Leaflets.

**Impurities:** Not more than 10 per cent. of stem tissues, pods, seeds and other impurities.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** East and Central Africa and India.

#### **Description:**

India senna occurs as a mixture of entire with a few broken leaves. The leaves are even pinnately compound. The leaflets are usually separated from the stalks. The petioles measure 2 mm. or less in length. The blade is inequilateral at the base. The margin is entire. The apex is acuminate, acute and mucronate. The outline varies from linear-lanceolate to oblong-lanceolate. The blades measure 5.5 cm. or less in length and 16 mm. or less in width. These leaflets are uniformly longer in proportion to their width than the leaflets of Alexandria senna. The upper surface is smooth and varies in color from dark to yellowish green; the veins are slightly elevated. The under surface is slightly hairy and light yellowish green in color; the veins are elevated. The texture is subcoriaceous. The odor is slight. The taste is bitter and mucilaginous.

**Constituents:** Cathartic acid, glucosides, gum, resin, sugar, bitter principle, volatile oil, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

Confectio Sennæ N. F.; Dose, 4 Gm. (1 drachm).

Fluidextractum Sennæ; Dose, 2 mils (30 min.).

Infusum Sennæ Compositum; Dose, 120 mils (4 fl. ozs.).

Pulvis Glycyrrhizæ Compositus; Dose, 4 Gm. (1 drachm).

Species Laxativæ N. F.; Dose, 1.3 Gm. (20 grains).

Syrupus Ficorum Compositus N. F.; Dose, 4 mils (1 fl. dr.).

Syrupus Sennæ (from fluidextract); Dose, 4 mils (1 fl. dr.).

Syrupus Sennæ Aromaticus N. F.; Dose, 8 mils (2 fl. drs.).

Syrupus Sennæ Compositus N. F.; Dose, 8 mils (2 fl. drs.).



### SENNA—ALEXANDRIA

1, Six leaflets of variable size and form. 2, Typical Alexandria senna leaves. 3, Fruit (pod). 4, Seed. 5, Stems.

## **SENNA (Senn.) U. S. P.**

### **(2) Alexandria Senna**

**English name:** Senna.

**Synonyms:** Alexandria Senna.

**Botanical origin:** *Cassia acutifolia* Delile. (Fam. *Leguminosæ*.)

**Part used:** Leaflets.

**Impurities:** Not more than 10 per cent. of stem tissues, pods, seeds, and other matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Central Africa.

#### **Description:**

Alexandria Senna occurs as a mixture of entire and broken pieces of leaflets, stalks and fruits. The leaflets are usually separated from the stalks. The petioles measure 1 mm. or less in length. The blade of the leaflet is inequilateral, rounded on one side, acute on the other. The margin is entire. The apex is acute and mucronate. The outline varies from ovate-lanceolate to oblong-lanceolate. The blade measures 4.2 cm. or less in length and 17 mm. or less in diameter. The upper surface is nearly smooth and varies in color from dark to light green; the veins are slightly elevated. The under surface is hairy and grayish green in color; the veins are elevated. The texture is coriaceous. The odor is slight. The taste is bitter and mucilaginous.

**Constituents:** Cathartic acid, glucosides, gum, resin, sugar, bitter principle, volatile oil, etc.

**Dose:** 1 Gm. (15 grains).

#### **Preparations:**

Confectio Sennæ N. F.; Dose, 4 Gm. (1 drachm).

Fluidextractum Sennæ; Dose, 2 mils (30 min.).

Infusum Sennæ Compositum; Dose, 120 mils (4 fl. ozs.).

Pulvis Glycyrrhizæ Compositus; Dose, 4 Gm. (1 drachm).

Species Laxativæ N. F.; Dose, 1.3 Gm. (20 grains).

Syrpus Ficorum Compositus N. F.; Dose, 4 mils (1 fl. dr.).

Syrpus Sennæ (from fluidextract); Dose, 4 mils (1 fl. dr.).

Syrpus Sennæ Aromaticus N. F.; Dose, 8 mils (2 fl. drs.).

Syrpus Sennæ Compositus N. F.; Dose, 8 mils (2 fl. drs.).

## CHAPTER XII

### FLOWERS

THE medicinal flowers are grouped into two classes:  
(1) Simple Flowers and (2) Flower Heads.

#### SIMPLE FLOWERS

When studying simple flowers, there must be considered the following: Type, peduncle, pedicel, calyx, corolla, andrœcium, gynæcium, fruit, color of mass, odor and taste.

1. **Type.** Convallaria flowers occur in a scorpioid raceme; brayera in compound panicles; the other official flowers usually occur solitary.

2. **Peduncles.** The peduncle is the stem of the inflorescence. The peduncle of convallaria flowers is simple, smooth and curved. In brayera the peduncles are branched and hairy, and each branch is subtended by a leaf with large bracts or the smallest branch by bracts.

3. **Pedicels.** The pedicel is the stem of the individual flowers. The pedicels of convallaria flowers are subtended by a small bract and they are smooth and slender; in arnica flowers they are very minute. Commercial mullein flowers have no pedicels, because the pedicel, calyx and pistil remain attached to the plant when the flowers are collected.

4. **Calyx.** The calyx is the outer set of floral leaves. In cloves the calyx is united below and expanded above into four lobes. No calyx is present in mullein flowers. In sambucus the calyx is united below, free above and with five teeth. In brayera the calyx is united below and free above; it has five lobes.

5. **Corolla.** The corolla is the inner of two sets of floral leaves. Clove has four brown imbricated petals

covering the stamens and pistils. The corolla of mullein flowers is united below, and the free portions are lobed and yellow. Lily-of-the-valley flowers are united and form a bell-shaped (campanulate) corolla; the free portion forms five lobes, which recurve. Elder flower corolla is united below to form a wheel-shaped (rotate) corolla; the free portion forms five lobes of a greenish yellow color. Brayera corolla is usually not present in the drug. Red rose consists almost wholly of imbricated (overlapping) petals.

6. **Andrœcium.** The andrœcium consists of stamens or male reproductive organs of the flower. In clove the stamens are numerous, and are enclosed by the imbricated petals. In mullein flowers there are five stamens, three long and two short; all five are covered with hairs. In convallaria there are six stems inserted on the perianth; in elder flowers there are six stamens; in brayera the pistillate flowers are official, so no stamens are present. Red rose usually has numerous stamens among the petals forming the central part of the cone.

7. **Gynæcium.** The gynæcium consists of one or more separate pistils, or of a pistil composed of united carpels. In clove the pistil consists of a two-celled ovary and one persistent style. No pistils are present in mullein flowers; in convallaria and elder flowers the pistil has a three-celled ovary and a three-parted style; crocus consists of yellow style tissue; corn silk consists of fresh stigmas.

8. **Fruits.** Fruits are rarely present in a fully developed condition in any of the flowers; therefore they are not diagnostic.

9. **Color.** The color of the mass of flowers differs with each drug. Clove is dark brown; mullein is yellow; convallaria flowers are yellowish brown; sambucus is greenish yellow; brayera is reddish brown; red rose is purplish red; saffron is dark red; fresh corn silk varies from green to dark brown.

10. **Odor.** Clove, red rose, *rosa gallica* and crocus

have an aromatic odor; mullein, elder, brayera, and corn silk have no characteristic odor.

11. **Taste.** The taste of clove and of saffron is strongly pungent; that of elder flowers and red rose is bitter.

## FLOWER HEADS

Flower heads are composed of a great number of flowers arranged in such a manner that they appear as a single flower. In the study of flower heads the following must be considered: Occurrence, peduncle, involucre, ray flowers, disk flowers, receptacle, color of mass, odor and taste.

1. **Occurrence.** Most flower heads occur in a broken condition, but occasionally they are entire, as in trifolium.

2. **Peduncle.** The peduncle is the stem upon which all the flowers are borne. In arnica, and occasionally in calendula, the peduncle is hairy and long; in matricaria the peduncles are furrowed.

3. **Involucre.** The involucre is made up of one or more circles of bracts or modified leaves. In arnica and calendula the involucre consists of two rows (series) of bracts; in matricaria it is frequently in three series. In clover the flower head is composed of simple flowers, each similar in structure.

4. **Ray Flowers.** The ray flowers are the outer circle of ligulate (strap-shaped) and usually pistillate flowers. In arnica and calendula they are yellow; in matricaria they are nearly white. In all the flowers the veins are prominent and the apex is toothed. Calendula consists almost wholly of ray flowers.

5. **Disk Flowers.** Disk flowers are the perfect flowers such as make up the greater part of arnica (refer to description under arnica) and matricaria. Very few disk flowers are present in calendula.

6. **Receptacle.** The receptacle is that part of the flower head which bears all the flowers. In arnica the receptacle is convex, pitted and hairy. In matricaria it is greatly elongated, pitted and free from hairs.

**7. Color.** The color must always be considered when studying flowers. In calendula, for example, the flowers are used largely for the yellow coloring substance found in them. If they are not kept in a dry place, or if kept for a long period, they lose their color and consequently their value as a coloring agent.

**8. Odor.** Arnica and matricaria have an aromatic odor; calendula and trifolium have no characteristic odor.

**9. Taste.** The taste of most of the flowers is bitter; that of arnica and matricaria is pungent; while that of calendula is slightly salty.

## **CARYOPHYLLUS**

**1, Zanzibar cloves. 2, Amboyna cloves. 3, Penang  
cloves.**

## **CARYOPHYLLUS (Caryoph.) U. S. P.**

**English name:** Clove.

**Synonyms:** None in common use.

**Botanical origin:** *Eugenia aromatica* (Linné) O. Kuntze; *Jambosa Caryophyllus* (Sprengel) Niedenzu. (Fam. *Myrtaceæ*.)

**Part used:** Flower buds.

**Impurities:** Not more than 5 per cent. of the peduncles, stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent. The amount of ash insoluble in hydrochloric acid is not more than 0.5 per cent. of the weight of clove taken.

**Habitat:** Cultivated in West Indies, South America and Africa.

**Description:**

Clove occurs as a mixture of entire flower buds of variable size. The calyx is tubular, compressed, two-sided and tapering below and four-sided above, and it terminates in four calyx teeth. These teeth curve upward and inward (involute) and are sharp-pointed. The maximum length is 18 mm. The color of the calyx varies from nearly black to reddish brown and the surface appears granular. The corolla consists of four imbricated yellowish or reddish brown petals of a globular or conical form. The andræcium consists of numerous reddish brown stamens which are covered by the petals. The gynæcium consists of one pistil with a two-celled ovary and one stout, persistent style. The odor is strongly aromatic. The taste is strongly pungent. The three commercial varieties of cloves are Zanzibar, Amboyna and Penang. The Zanzibar cloves are the smallest, darkest variety. The Amboyna cloves are larger and lighter in color, and many of the petals and stamens are not present. Penang cloves are the largest, and they are light reddish brown in color. All the varieties should yield oil to a groove caused by a scratch or cut.

**Constituents:** Volatile oil, eugenol, gum, resin, tannin, etc.

**Dose:** 0.25 Gm. (4 grains).

**Preparations:**

Oleum Caryophylli; Dose, 0.2 mil (3 min.).

Pulvis Aromaticus Rubefaciens N. F. (for external use).

## **VERBACI FLORES**

1, Mass of flowers. 2, Flower showing the hairy stamens.  
3, Small flower. 4, Under surface of the flower.

## **VERBASCI FLORES (Verbasc. Flor.) N. F.**

**English name:** Mullein Flowers.

**Synonyms:** Mullen Flowers.

**Botanical origin:** *Verbascum phlomoides* Linné or  
*Verbascum thapsiforme* Schraeder. (Fam. *Scrophulariaceæ*.)

**Part used:** Corollas with adhering stamens.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Europe and Asia; naturalized in Massachusetts.

### **Description:**

Mullein Flowers occur in an entire condition, and they consist only of the corolla and the stamens. The corolla consists of five petals united below into a narrow tube and expanded above into a saucer-shaped part. The free ends are lobed. The lobes are rounded and usually unequal in length. The andræcium consists of five stamens adnate (attached) to the base of the corolla. Three of the stamens are shorter than the other two. All the stamens have a great number of white hairs; this gives them a woolly appearance. The odor is not distinct. The taste is slightly mucilaginous.

**Constituents:** Fixed and volatile oils, sugar, resin, wax, tannin, coloring matter, etc.

**Dose:** 8 Gm. (2 drachms).

### **Preparations:**

None.

## **CONVALLARIA FLORES**

1. Flowers and stems.
2. One-sided raceme of flowers.
3. Five stamens of the flower.

# **CONVALLARIAE FLORES (Convallar. Flor.) N. F.**

**English name:** Convallaria Flowers.

**Synonyms:** Lily-of-the-Valley Flowers.

**Botanical origin:** *Convallaria majalis* Linné. (Fam. *Liliaceæ*.)

**Part used:** Flower heads.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 12 per cent.

**Habitat:** Europe, Asia and Southern United States; cultivated extensively for its flowers.

## **Description:**

Convallaria Flowers occur as a mixture of entire and broken pieces of the one-sided raceme. The *peduncles* measure 19 cm. or less in length. The *bracts* subtending each flower are thin and lanceolate. The *pedicels* curve downward and measure 1 cm. or less in length. The *perianth* is campanulate; its six lobes are ovate and acute. The *andræcium* consists of six included, short-styled stamens inserted on the perianth. The *gynæcium* consists of one ovary with three cells, a three-grooved style, and a three-lobed capitate stigma. The *odor* is slightly aromatic. The *taste* is sweet and slightly acrid.

**Constituents:** Volatile oil, resin, glucosides (convallamarin, convallarin), etc.

**Dose:** 0.5 Gm. (8 grains).

## **Preparations:**

Fluidextractum Convallariæ Florum; Dose, 0.5 mil (8 min.).

## **SAMBUOUS**

1, Numerous flowers and flower buds. 2, Small panicle of flowers. 3, Stems. 4, Single flower and, above, a cluster of buds.

## **SAMBUCUS (Sambuc.) N. F.**

**English name:** Sambucus.

**Synonyms:** Elder Flowers, American Elder, Sweet Elder.

**Botanical origin:** *Sambucus canadensis* Linné or *Sambucus nigra* Linné. (Fam. *Caprifoliaceæ*.)

**Part used:** Flower heads.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** New Brunswick to Manitoba, south to Florida and Texas.

### **Description:**

*Sambucus* occurs as a mixture of entire and broken flowers and buds. The *pedicels* measure 5 mm. or less in length. The *calyx* is ovoid and its five teeth are minute. The *corolla* is greenish yellow and rotate; its lobes are ovate. The *andracium* consists of five stamens adnate to the base of the corolla and alternating with the corolla lobes. The *gynæcium* consists of one pistil with a three-celled ovary and one three-parted style with three stigmas. The buds are small, greenish yellow, and globular. The *odor* is slightly aromatic. The *taste* is slightly bitter.

**Constituents:** Volatile oil, gum, resin, tannin, bitter glucoside, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

None.

## **BRAYERA**

1, Flowers and stems. 2, Bract. 4, Part of a panicle.  
5, Small bracts. 6, Three flowers and a floral bract.

## BRAYERA (Brayer.) N. F.

**English name:** Brayera.

**Synonyms:** Kousso, Cusso.

**Botanical origin:** *Hagenia abyssinica* (Bruce) Gmelin.  
(Fam. Rosaceæ.)

**Part used:** Panicles of pistillate flowers.

**Impurities:** Not more than 10 per cent. of the staminate flowers, other parts of the tree or other matter. Reject portions of the stems over 3 mm. in diameter, and any binding material, before the drug is powdered or used.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Abyssinia.

### Description:

Brayera occurs as broken fragments or as panicles arranged in bundles, held together with spirally arranged flattened portions of the larger stems of brayera plant. The peduncles are tortuous and pinkish brown; the surface is sunken and hairy. At the base of the larger peduncles there is a large, oblong, two-lobed sheathing bract, and several leaves subtending the panicles. At the base of the medium-sized peduncles the bract is smaller and is associated with two leaves. The smallest peduncles are subtended by a thin, hairy ovate bract. The pedicels are short; each is subtended by two rounded bracts. The bractlets subtending each flower are obovate, and the veins are large, elevated, and purple. The calyx consists of five small calyx lobes. The petals, which are usually absent in the drug, are small and white. The andræcium consists of aborted stamens. The gynæcium consists of a one-celled ovary, a two-parted style, and two stigmas. The fruit is an achene. The odor is indistinct. The taste is bitter.

**Constituents:** Tannin, volatile oil, resin, glucosides (kosin, koussein, etc.), etc.

**Dose:** 15 Gm. (240 grains).

### Preparations:

Infusum Brayeræ. Dose, 250 mils (8 fl. ozs.).

## **ROSA GALlica**

1, Many united and separated petals. 2, Cone of imbricate petals. 3, Inner surface of the petal.

## **ROSA GALLICA (Rosa Gall.) U. S. P.**

**English name:** Red Rose.

**Synonyms:** French Rose.

**Botanical origin:** *Rosa gallica* Linné. (Fam. Rosaceæ.)

**Part used:** Petals collected just before expansion of the flower.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 3.5 per cent.

**Habitat:** Southern Europe and Western Asia; cultivated in gardens.

### **Description:**

Red Rose occurs as a mixture of entire cones and separated and broken petals. The cones consist of a great number of imbricated petals. They measure 20 mm. or less in length and 16 mm. or less in width at the base. The petals are tapering and yellow at the base. The margin is entire. The apex is rounded and notched. The outline is obcordate. The upper surface is soft and velvety and purplish red in color. The under surface is smooth and light purplish red in color; the veins are distinct. The odor is aromatic. The taste is slightly pungent and bitter.

**Constituents:** Volatile oil, red coloring matter, gallo-tannic acid, sugar, mucilage, quercitrin.

**Dose:** None given.

### **Preparations:**

Fluidextractum Rosæ; Dose, 2 mils (30 min.).

Infusum Rosæ Compositum N. F.; Dose, 100 mils ( $3\frac{1}{2}$  fl. ozs.).

Mel Rosæ (from fluidextract); Dose, 4 mils (1 fl. dr.).

Syrupus Rosæ N. F. (from fluidextract).

## CROCUS

1. A mass of stigmas and styles. 2. Papillæ of the  
stigma, magnified.

## CROCUS (Croc.) N. F.

**English name:** Crocus.

**Synonyms:** Saffron, Spanish Saffron.

**Botanical origin:** *Crocus sativus* Linné. (Fam. *Iridaceæ*.)

**Part used:** Stigmas.

**Impurities:** Not more than 10 per cent. of yellow styles or other foreign matter.

**Assay:** It loses not more than 14 per cent. of its weight when dried at 100° C.

**Ash:** Not more than 7.5 per cent. of infusible ash.

**Habitat:** Southern Europe and Asia.

### Description:

Saffron occurs as entire or broken pieces of the styles and stigmas. The styles are slender and yellow. The stigmas are tapering below, three-lobed above, and rolled inward. The stigmas are covered with large papillæ which are visible under the high power of the microscope. The odor is persistent and aromatic. The taste is pungent.

**Constituents:** Volatile and fixed oils, wax, bitter principle, crocin (glucoside), etc.

**Dose:** None given.

### Preparations:

Tinctura Croci. (Used for coloring.)

## **ZEA**

1. Light-colored styles and stigmas. 2. Dark-colored  
styles and stigmas, which are worthless.

## ZEA N. F.

**English name:** Zea.

**Synonyms:** Corn Silk.

**Botanical origin:** *Zea Mays* Linné. (Fam. *Gramineæ*.)

**Part used:** Fresh styles and stigmas.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Tropical America; cultivated extensively.

**Description:**

Fresh Corn Silk occurs as tangled masses of entire and broken styles. The styles measure 30 cm. or less in length and 5 mm. or less in diameter. The color varies from yellow to red to brown and to bright green. The stigma is two-parted. The drug of commerce consists of the dried styles and stigmas. This should not be used in making preparations, because it is medicinally inactive. The odor is not distinct. The taste is slightly sweet.

**Constituents:** Resin, maizenic acid, fixed oil, sugar, gum, etc.

**Dose:** 4 Gm. (1 drachm).

**Preparations:**

Fluidextractum Zeæ; Dose, 4 mils (1 fl. dr.).

## **ARNICA**

**1, Many flowers. 2, Involucre bracts. 3, Pitted receptacle.  
4, Peduncle. 5, Flower head.**

## **ARNICA (Arnic.) U. S. P.**

**English name:** Arnica.

**Synonyms:** Arnica Flowers.

**Botanical origin:** *Arnica montana* Linné. (Fam. *Compositæ*.)

**Part used:** Flower heads.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Europe and Northern Asia.

### **Description:**

*Arnica* occurs as a mixture of entire and broken pieces of the flowers. The *peduncle* is hairy and measures 3 cm. or less in length. The *involucre* consists of one or two rows of *bracts* which have a maximum length of 15 mm. The *bracts* are pubescent, dark green, except the edges, which are light green and linear-lanceolate in outline. The *ray flowers* are ligulate, pistillate and orange yellow in color. The *disk flowers* are perfect. The *pappus* consists of one circle of multicellular, multiseriate, branched hairs. The *corolla* is yellow, tubular below and five-toothed above. The *andracium* consists of five exserted stamens with their anthers united and around the style. The *gynacium* consists of one pistil with a one-celled ovary, one style, and a two-parted stigma. The fruit is an achene with a pappus. The *receptacle* is convex, pitted, hairy, and solid. The *odor* is aromatic. The *taste* is bitter and acrid.

**Constituents:** Bitter principle (arnicin), alkaloid (arnicine), volatile oil, fat, resin, etc.

**Dose:** None given.

### **Preparations:**

Fluidextractum Arnicæ N. F.; Dose, 0.1 mil (1½ min.).  
Tinctura Arnicæ; Dose, 1 mil (15 min.).

## **CALENDULA**

1, Many flowers. 2, Involucral bracts. 3, Flower head.  
4, Disk flowers. 5, Ray flowers.

## **CALENDULA (Calend.) N. F.**

**English name:** Calendula.

**Synonyms:** Marigold, Holligold, Mary-bud.

**Botanical origin:** *Calendula officinalis* Linné. (Fam. *Compositæ*.)

**Part used:** Flower heads.

**Impurities:** Not more than 2 per cent. of other parts of the plant or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 11 per cent.

**Habitat:** Southern Europe and parts of Asia.

### **Description:**

*Calendula* occurs as entire ligulate flowers mixed with a few flower heads. The flower heads have a short, thick, curved peduncle. The *involucre* consists of oblong-lanceolate, hairy, greenish gray bracts. The individual flowers are yellow, mostly ligulate, and they have a maximum length of 26 mm. These flowers are oblanceolate, two to three-toothed and two to six-veined. The basal part of the flower is incurved and encloses a bifid stigma. The tubular flowers are small and five-lobed. The *receptacle* is rough. The *seeds* are angled and dark brown. The *odor* is slight. The *taste* is slightly salty and bitter.

**Constituents:** Gum, coloring matter, volatile oil, bitter principle, calendulin, etc.

### **Preparations:**

**Fluidextractum Calendulæ.** (Used as a coloring agent and local irritant.)

**Tinctura Calendulæ.** (Used externally.)

## **MATRICARIA**

1, Mass of flower heads. 2, Heads of variable size. 3,  
Involucre. 4, Head with reflex petals. 5, Receptacles of  
variable size.

## **MATRICARIA (Matricar.) U. S. P.**

**English name:** Matricaria.

**Synonyms:** German Chamomile, Wild Chamomile.

**Botanical origin:** *Matricaria Chamomilla* Linné.  
(Fam. *Compositæ*.)

**Part used:** Flower heads.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 13 per cent.

**Habitat:** Europe and Western Asia; naturalized in the United States, New York southward.

### **Description:**

*Matricaria* occurs as a mixture of entire heads and separate and broken fragments of the flowers and stems. The *peduncles* are furrowed and measure 2.5 cm. or less in length. The *involucre* is saucer-shaped. The *bracts*, which are in two or more series, are imbricate and oblong; their central portions are dark green and their margins lighter-colored. Their *apexes* are obtuse. The *ray flowers*, which number as many as twenty, are pistillate and white; the ligules are linear-oblong, indistinctly four-nerved and three-toothed. They usually bend back upon the peduncle. The *disk flowers* are perfect. The *pappus* is not present. The *corolla* is yellow, tubular below and five-toothed above. The *androcium* consists of five stamens. The *gynoecium* consists of one pistil with a one-celled ovary, one style, and a two-parted pistil. The fruit is a three- to five-ribbed achene. The *receptacle* is pitted and naked and varies in form from lanceolate to ovoid to orbicular. The *odor* is sweet and aromatic. The *taste* is pungent and bitter.

**Constituents:** Volatile oil, bitter extractive, tannin, etc.

**Dose:** 15 Gm. (4 drachms).

### **Preparations:**

None.

## **TRIFOLIUM**

1. Flower heads.
2. Stipules.
3. Side view of the stipules.
4. Flower head with part of the flowers removed.

## **TRIFOLIUM (Trifol.) N. F.**

**English name:** Trifolium.

**Synonyms:** Red Clover Blossoms, Honeysuckle Clover Blossoms.

**Botanical origin:** *Trifolium pratense* Linné. (Fam. Leguminosæ.)

**Part used:** Flower heads.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Southern British America and the United States.

### **Description:**

Trifolium occurs as a mixture of entire and broken fragments of the flower heads of papilionaceous flowers. The *stipules* are two-lobed, prominently veined and hairy, and associated with a small three-foliate leaf. The *calyx* is hairy and tubular and its five teeth are subulate. The *corolla* is united into a tube; the standard is longer and broader than the two wings; the heel is short. The *andræcium* consists of ten stamens in two groups, nine together and one separate. The *gynæcium* consists of one pistil with a one-celled ovary with many ovules, and one style. The *fruit* is a several-seeded legume enclosed in the persistent calyx. The *odor* is slightly aromatic. The *taste* is sweet and slightly bitter.

**Constituents:** Glucosides, tannin, resins, fat, chlorophyl, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Trifolii; Dose, 4 mils (1 fl. dr.).

## CHAPTER XIII

### FRUITS

THE official fruits are grouped into eight classes, as follows: Drupes, achenes, berries, cremocarps, capsules, multiple fruits, collective fruits, and legumes.

1. **Drupes.** Drupes are fruits having a thin skin (epicarp), a fleshy pulp (sarcocarp), and a hard endocarp (putamen) around the seed. There are two classes of official drupes: those with one stone (putamen and seed), and those with more than one stone. Prune has one stone; pimenta has two or three stones; rhamnus cathartica contains three or four stones.

2. **Achenes.** Malt (barley, germinated and dried) is an example of a caryopsis, an achene-like fruit in which the pericarp and seed are grown together.

3. **Berries.** A berry is a fruit in which the seed is directly embedded in the pulp. Solanum is a typical fruit; the skin (epicarp) is thin, the pulp is fleshy, and the seeds are embedded in it.

4. **Cremocarps.** A cremocarp is a fruit composed of two mericarps (achenes) held together by a carpophore. The official cremocarps are fennel, caraway, angelica, anise, parsley, conium, celery and coriander. Of these, parsley and conium are the only ones likely to be confused; therefore their structure should be compared closely.

5. **Capsules.** A capsule is a dehiscent fruit composed of a mature compound (more than one) pistil. Cassia fistula, vanilla, poppy, and prickly ash are capsules. They differ in size, structure, etc.

6. **Multiple Fruits.** The multiple fruits are those in which several ripened pistils from several flowers

form the fruit. Juniper, hops and figs are multiple fruits.

7. **Aggregate Fruits.** An aggregate fruit is one in which several ripened pistils from one flower form the fruit. The two official aggregate fruits are red raspberry and blackberry.

8. **Legumes.** A legume is a fruit composed of one carpel (monocarpellary) which opens (dehisces) along two sutures to discharge the seed, as in bean or pea. Tamarind is a legume. The pod should be removed in the official drug; when the pod is removed, all resemblance to a fruit is destroyed.

## **PRUNUM**

1. Five prunes of variable size. 2. Pulp removed from the pit. 3. Pit or stone removed. 4. Seed in the putamen.

## **PRUNUM N. F.**

**English name:** Prune.

**Synonyms:** None.

**Botanical origin:** *Prunus domestica* Linné. (Fam. *Rosaceæ*.)

**Part used:** Ripe fruit, partly dried.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Asia; universally cultivated.

### **Description:**

Prune occurs as entire, irregularly compressed fruits. Prunes are drupes. The outline varies from oval to elliptical. They measure 4 cm. or less in length and 3.5 cm. or less in width. The color is brownish black. The surface is smooth, sunken, sticky, and slightly grooved on one side, with a depressed stalk scar at the base. The epicarp is tough. The sarcocarp is yellowish brown and soft. The putamen is flattened, hard, and ridged near the edge of the two flattened surfaces. The seed is light brown, hairy, furrowed, rounded at one end and pointed at the other. The seeds measure 3 cm. or less in length and 2 mm. or less in width. The seeds are aromatic. The taste is pungent and bitter. The putamen and seed should be rejected when making preparations. The odor of the pulp of prunes is aromatic. The taste is sweet.

**Constituents:** Sugar, pectin, albumin, malic and tartaric acids, potassium salts, etc.

### **Preparations:**

Ingredient of Confectio Sennæ.

2



3



4



5



## SABAL

1, Fresh berries. 2, Partially dried fruits. 3, Seed in the endocarp. 4, Seed removed from the endocarp. 5, Seed; to the right, cross-section of sarcocarp with oil cavities.

## SABAL U. S. P.

**English name:** Sabal.

**Synonyms:** Saw Palmetto Berries.

**Botanical origin:** *Serenoa serrulata* (Michaux)  
Hooker filius. (Fam. *Palmæ*.)

**Part used:** Ripe fruit, partially dried.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** North Carolina and Arkansas, south to Florida and Texas.

### Description:

Sabal occurs as entire fruits. Sabal is a drupe. The outline varies from oval to elliptical. It measures 25 cm. or less in length and 18 mm. or less in width. The color varies from brownish black to black. The surface is smooth, even or sunken, oily or dry. The base has a short stalk or stem scar. The apex has a style scar. The epicarp is tough. The sarcocarp is yellowish brown, fibrous and soft. The endocarp is reddish brown and fibrous on the outer surface; the inner surface is smooth. The seed is yellowish or reddish brown, ellipsoidal and waxy when cut; the raphe side is elevated. The odor is aromatic. The taste is sweet, pungent and acrid.

**Constituents:** Volatile and fixed oils, resin, sugar, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Fluidextractum Sabal; Dose, 1 mil (15 min.).  
Tinctura Sabal et Santali N. F.; Dose, 4 mils (1 fl. dr.).

**RHUS GLABRA**

1, Branched stem with fruits. 2, Fruits. 3, Larger stem.

## **RHUS GLABRA (Rhus Glab.) N. F.**

**English name:** Rhus Glabra.

**Synonyms:** Sumac Berries, Scarlet Sumac Fruit.

**Botanical origin:** *Rhus glabra* Linné. (Fam. *Anacardiaceæ*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 4 per cent.

**Habitat:** Asia, Europe and Northern North America.

### **Description:**

*Rhus glabra* occurs as entire fruits. *Rhus glabra* is a *drupe*. The *outline* is subglobose and slightly compressed. The *fruit* measures 4 mm. or less in length and 5 mm. or less in diameter. The *color* is dark red. The *base* of the fruit is frequently attached to a slender pedestal bearing a five-cleft calyx. The *apex* has the persistent remains of a three-parted black style. The *surface* is hairy and rough. The *epicarp* and *mesocarp* are thin. The *endocarp* is smooth, hard and brittle, and it separates from the outer layers. The *seeds* are slightly reniform and smooth, and have a light-colored *hilum*. The *odor* is not distinct. The *taste* is sour and astringent.

**Constituents:** Malic, tannic and gallic acids, fixed and volatile oils, coloring matter, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Rhois Glabrae; Dose, 1 mil (15 min.).

## **CUBEBA**

1, Many fruits. 2, Large fruits. 3, Small fruits. 4, Seed  
in the pericarp. 5, Stems.

## CUBEBA (Cubeb.) U. S. P.

**English name:** Cubeb.

**Synonyms:** Cubebs, Cubeb Berries.

**Botanical origin:** *Piper Cubeba* Linné filius. (Fam. *Piperaceæ*.)

**Part used:** Unripe fruit, full grown.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Not less than 10 per cent. of volatile extractive, soluble in ether.

**Ash:** Not more than 8 per cent.

**Habitat:** East and West Indies, Ceylon.

### Description:

Cubeb occurs as a mixture of entire fruits and stems. Cubeb is a drupe. The outline of the upper portion is globular, acute and pointed; the lower portion tapers into a thecaphore. Cubeb measures 2 cm. or less in length and 7 mm. or less in width. The thecaphore measures 14 mm. or less in length. The color varies from brownish to bluish to grayish black. The surface of the globular portion is reticulate, of the thecaphore wrinkled. The epicarp is thin. The mesocarp is greenish brown and oily. The endocarp is hard and smooth on the inner surface. The seed is reddish brown and smooth; one end is slightly elevated. The odor is aromatic. The taste is strongly pungent.

**Constituents:** Volatile and fixed oils, cubebic acid, resin, fatty oil, gum, cubebin, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Fluidextractum Cubebæ N. F.; Dose, 1 mil (15 min.).

Oleoresina Cubebæ; Dose, 0.5 Gm. (8 grains).

Oleum Cubebæ N. F.; Dose, 0.5 mil (8 min.).

Tinctura Cubebæ N. F.; Dose, 4 mils (1 fl. dr.).

Trochisci Cubebæ (from Oleoresin).

## **PIPER**

**1-6, Varieties of Black Pepper.**

## PIPER U. S. P.

**English name:** Pepper.

**Synonyms:** Black pepper.

**Botanical origin:** *Piper nigrum* Linné. (Fam. *Piperaceæ*.)

**Part used:** Unripe fruit.

**Impurities:** Not more than 2 per cent. of stems or other foreign matter.

**Assay:** Not less than 6 per cent. of non-volatile extract, soluble in ether. Not less than 25 per cent. of starch.

**Ash:** Not more than 7 per cent. The amount of ash insoluble in diluted hydrochloric acid does not exceed 2 per cent. of the weight of pepper taken.

**Habitat:** West and East Indies; cultivated in Singapore, Ceylon, Penang, etc.

### Description:

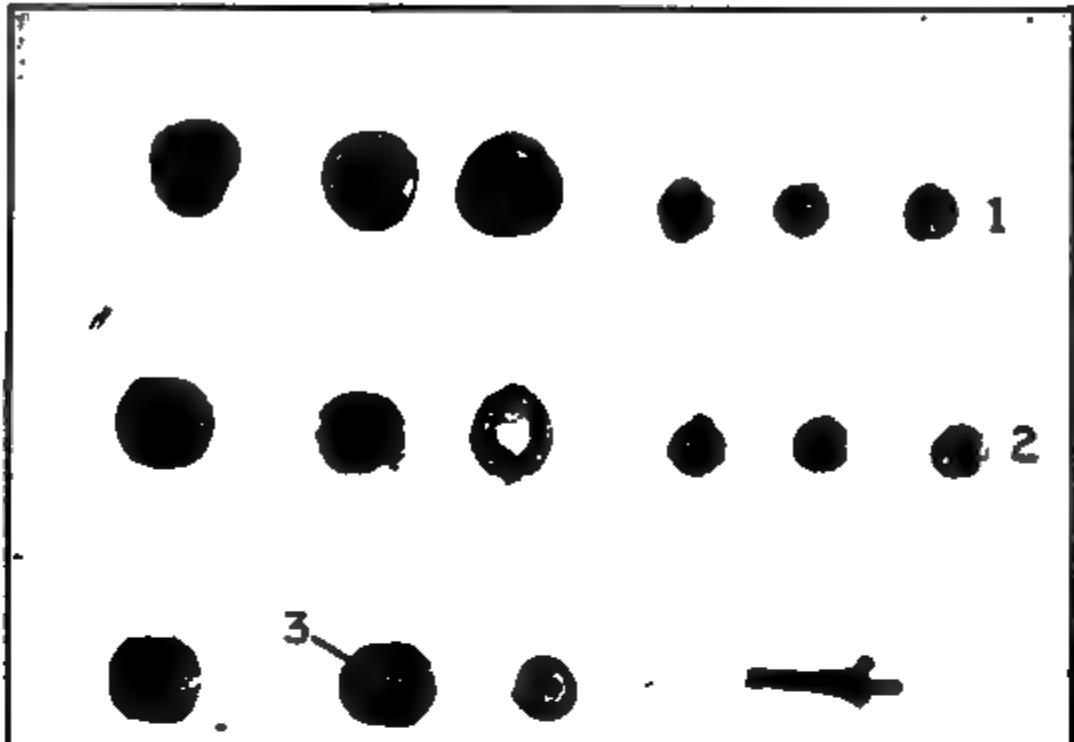
Pepper occurs as entire fruits. It is a *drupe*. The *outline* is nearly globular. The fruits measure 6 mm. or less in diameter. The *color* of the different varieties of pepper varies from grayish to brownish to black. The *surface* is coarsely reticulate and dull. The *epicarp* is thin and dark colored. The *mesocarp* is thin. The *endocarp* is light colored. The seed adheres to the endocarp; it is yellowish green in the outer layers, yellow or gray around the cavity. The *odor* is aromatic. The *taste* is strongly pungent.

**Constituents:** Alkaloids (piperidine, piperine), resin, volatile oil, proteids, starch, etc.

**Dose:** 0.5 Gm. (8 grains).

### Preparations:

Oleoresina Piperis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).



## PIMENTA

1. Three seeds from a three-carpeled fruit. 2. Seeds from a two-carpeled fruit. 3. Several fruits. 4. Mass of fruits. 5. Flowers and fruit attached to stem.

## PIMENTA (Piment.) N. F.

**English name:** Pimenta.

**Synonyms:** Allspice, Clove Pepper.

**Botanical origin:** *Pimenta officinalis* Lindley. (Fam. *Myrtaceæ*.)

**Part used:** Nearly ripe fruit.

**Impurities:** Not more than 5 per cent. of stems or other foreign matter.

**Assay:** Crude fiber does not exceed 25 per cent.

**Ash:** Not more than 6 per cent.

**Habitat:** West Indies, Mexico, and South America.

### Description:

Allspice occurs as a mixture of entire fruits and broken stems. Allspice is a two to three-celled and -seeded inferior drupe. The outline varies from globular to sub-globular. It measures 6 mm. or less in length and 8 mm. or less in width. The color varies from light to dark reddish brown. The surface is rough and granular. The base has a short stalk or a stem scar; the apex has a calyx ring and frequently minute blunt teeth. The apex is depressed within the calyx ring, and there are the remains of a persistent style in the center of the depression. Two-seeded forms are slightly grooved on two sides and three-seeded forms on three sides. The epicarp is thin. The mesocarp is yellowish and porous. The endocarp is brown, smooth and shiny. The dissepiments are thin and papery. The seeds of two-celled forms are flattened on their inner face and rounded on their outer face. The seeds of three-celled forms have two flat surfaces and an outer rounded surface. They are reddish brown and smooth. The odor is aromatic. The taste is sweet and pungent.

**Constituents:** Volatile oil, resin, tannin, sugar, mucilage, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Oleum Pimentæ U. S. P.; Dose, 0.2 mil (3 min.).

**RHAMNUS CATHARTICA**

1. Fruits of variable size. 2. Persistent pedicel.

## **RHAMNUS CATHARTICA (Rhamn. Cath.) N. F.**

**English name:** Rhamnus Cathartica.

**Synonyms:** Buckthorn Berries.

**Botanical origin:** *Rhamnus cathartica* Linné. (Fam. *Rhamnaceæ*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 5 per cent. of unripe fruit or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Europe, Northern Asia and North America.

### **Description:**

*Rhamnus Cathartica* occurs as entire fruits. The outline varies from rounded to egg-shaped. The fruits measure 8 mm. or less in length and 8 mm. or less in diameter. The color varies from dark purple to black. The surface is rough and wrinkled. A pedicel is frequently attached to the basal part of the fruit. The fruit varies from three- to four-celled, and each cell may contain a nutlet. The odor is aromatic. The taste is sweet and bitter.

**Constituents:** Coloring matters, tannin, glucosides, emodin, sugar, pectin, gum, bitter principle, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Fluidextractum Rhamni Catharticæ; Dose, 1 mil (15 min.).  
Syrupus Rhamni Catharticæ; Dose, 8 mils (2 fl. drs.).

## **MALTUM**

**1.** Fruits of variable size. **2.** Groove at one side of the fruit. **3.** Fruit freed of pales. **4.** Cross-section of the fruit.

## MALTUM U. S. P.

**English name:** Malt.

**Synonyms:** Barley Malt.

**Botanical origin:** *Hordeum sativum* Jessen. (Fam. Gramineæ.)

**Part used:** Grain partially germinated and then dried.

**Impurities:** None given in U. S. P.

**Assay:** Capable of converting not less than five times its weight of starch into sugars.

**Ash:** None given.

**Habitat:** Western Asia, Egypt; cultivated.

### Description:

Barley Malt occurs as entire grains. Barley is an achene. Barley is ovate-lanceolate in outline. It measures 15 mm. or less in length and 5 mm. or less in diameter. The base is constricted. The apex is acuminate. The color is grayish yellow. The pales are imbricated. The fruit, freed of pales, is yellowish brown and rounded at the base, grooved on one side, and acuminate and hairy at the apex. Sections of the lower portions of the fruit are reniform. The outer layer is brown, the inner nearly white. The fracture is brittle. The odor is slight. The taste is sweet.

**Constituents:** Diastase, hordenine (alkaloid), etc.

**Dose:** None given in U. S. P.

### Preparations:

Extractum Malti; Dose, 15 Gm. (4 drachms).

## **AURANTII DULCIS CORTEX**

1. Outer surface of the fresh rind. 2. Inner surface showing the oil cavities. 3. White inner layer of the rind. 4. Dried worthless rind with sunken oil cavities.

**AURANTII DULCIS CÓTEX (Aurant. Dulc.  
Cort.) U. S. P.**

**English name:** Sweet Orange Peel.

**Synonyms:** None.

**Botanical origin:** *Citrus Aurantium sinensis* Gallesio.  
(Fam. *Rutaceæ*.)

**Part used:** Outer rind of the fresh, ripe fruit.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Widely cultivated, Florida, California, etc.

**Description:**

The fresh, outer rind of orange may be removed by peeling or grating. In no case should the white inner layer of the rind be used. Orange is a *hesperidium*. The *outline*, measurements, etc., do not need to be considered, since the fresh fruit is used in separating the rind. The *color* is orange yellow. The *surface* has numerous convex oil cavities surrounded by a smooth, shiny surface. The *odor* is aromatic. The *taste* is pungent.

**Constituents:** Volatile oil, bitter principle, resin, gum, tannin, etc.

**Dose:** None given officially.

**Preparations:**

Oleum Aurantii; Dose, 0.2 mil (3 min.).

Syrupus Aurantii (from Tincture).

Tinctura Aurantii Dulcis; Dose, 4 mils (1 fl. dr.).

## **LIMONIS CORTEX**

1, Outer surface of fresh rind. 2, Inner surface showing oil cavities. 3, White inner layer of the rind. 4, Dried worthless peel.

## **LIMONIS CORTEX (Limon. Cort.) U. S. P.**

**English name:** Lemon Peel.

**Synonyms:** None.

**Botanical origin:** *Citrus medica Limonum* (Risso)  
Hooker filius. (Fam. *Rutaceæ*.)

**Part used:** Outer rind of the fresh ripe fruit.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Widely cultivated in Florida and United States, etc.

### **Description:**

The fresh, outer rind of lemon may be removed by peeling or by grating. In no case should the white inner layer of the rind be used. Lemon is a *hesperidium*. The *outline*, measurements, etc., do not need to be considered, since the fresh fruit is used in separating the rind. The *color* is lemon yellow. The *surface* has numerous convex oil cavities surrounded by a smooth, shiny surface. The *odor* is aromatic. The *taste* is pungent.

**Constituents:** Volatile oil, bitter principles, resin, etc.

**Dose:** None given.

### **Preparations:**

Oleum Limonis; Dose, 0.2 mil (3 min.).  
Tinctura Limonis Corticis (flavoring agent).

## **AURANTII AMARI CORTEX**

1, Outer surface of the peel. 2, Ribbons or narrow peelings. 3, Persistent calyx. 4, Inner surface of the rind.

**AURANTII AMARI CORTEX** (Aurant. Amar.  
Cort.) U. S. P.

**English name:** Bitter Orange Peel.

**Synonyms:** None in common use.

**Botanical origin:** *Citrus Aurantium amara* Linné.  
(Fam. *Rutaceæ*.)

**Part used:** Dried rind.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Cultivated extensively in the subtropics.

**Description:**

Bitter orange peel occurs cut into quarters, eighths, or ribbons; the latter may be straight or curved. Bitter orange is a *hesperidium*. The outline of the pieces is irregular. The pieces are of variable length and they measure 8 mm. or less in thickness. The color of the outer surface varies from yellowish brown to dark green, of the inner surface grayish yellow. The outer surface is revolute along the cut edges; it is rough and has great numbers of circular, sunken oil cavities. Some pieces have the remains of the calyx attached. The inner surface is rough with numerous slightly elevated vascular bundles. The odor is aromatic. The taste is pungent and bitter.

**Constituents:** Volatile oil, bitter principles, acrid resin, gum, etc.

**Dose:** 1 Gm. (15 grains).

**Preparations:**

*Fluidextractum Aurantii Amari*; Dose, 1 mil (15 min.).

*Oleum Aurantii Amari* N. F.; Dose, 0.2 mil (3 min.).

*Tinctura Aurantii Amari*; Dose, 4 mils (1 fl. dr.).

*Tinctura Cinchonæ Composita*; Dose, 4 mils (1 fl. dr.).

*Tinctura Gentianæ Composita*; Dose, 4 mils (1 fl. dr.).

*Vinum Aurantii Compositum* N. F.; Dose, 4 mils (1 fl. dr.).

## **COLOCYNTHIS**

1. Part of a compressed cake of colocynth pulp. 2.  
Portions of the pulp free of seed, one piece showing seed  
cavities. 3. Seeds.

## **COLOCYNTHIS (Colocyn.) U. S. P.**

**English name:** Colocynth.

**Synonyms:** Colocynth Pulp, Bitter Apple, Colocynth Apple.

**Botanical origin:** *Citrullus Colocynthis* (Linné)  
Schrader. (Fam. *Cucurbitaceæ*.)

**Part used:** Dried pulp.

**Impurities:** Not more than 5 per cent. of seed or 2 per cent. of epicarp.

**Assay:** None given.

**Ash:** Not more than 15 per cent.

**Habitat:** Mediterranean region and Africa.

### **Description:**

Colocynth occurs as compressed cakes or as pieces of variable size mixed with epicarp and seeds. The outline of the pieces is irregular, and the size of the pieces is variable. The color varies from grayish white to yellow. The surface is soft, spongy, and frequently rough from depressions caused by seeds. The seeds vary from yellow to greenish brown; they are ovate in outline and laterally compressed. The epicarp is yellow and tough and resembles dried cucumber rind. The odor is not distinct. The taste is very strongly and persistently bitter.

**Constituents:** Colocynthin, pectin, gum, fixed oil, phosphates, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Extractum Colocynthidis; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Extractum Colocynthidis Compositum (from Extract); Dose, 0.25 Gm. (4 grains).

Pilulae Catharticae Compositae (from Compound Extract); Dose, 2 pills.

Pilulae Catharticae Vegetabiles N. F. (from Compound Extract); Dose, 2 pills.

Pilulae Colocynthidis Compositae N. F. (from Extract); Dose, 1 pill.

Pilulae Colocynthidis et Hyoscyami N. F. (from Extract); Dose, 1 pill.

Pilulae Colocynthidis et Podophylli N. F. (from Compound Extract); Dose, 1 pill.

Pilulae Laxativae Post-Partum N. F. (from Compound Extract); Dose, 1 pill.

## **CAPSICUM**

1, Mexican capsicum. 2, Mombasa capsicum. 3, Sierra Leone capsicum. 4, Nyassaland capsicum. 5, African capsicum.

## CAPSICUM (Caps.) U. S. P.

**English name:** Capsicum.

**Synonyms:** Red or Cayenne Pepper; Mexican, Mombassa, African or Sierra Leone Pepper; Chillies.

**Botanical origin:** *Capsicum frutescens* Linné. (Fam. Solanaceæ.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 2 per cent. of stems, calyxes, or other foreign matter.

**Assay:** Not less than 15 per cent. of non-volatile extractive, soluble in ether. 28 per cent. crude fiber.

**Ash:** Not more than 7 per cent. The amount of ash insoluble in hydrochloric acid does not exceed 1 per cent. of the weight of capsicum taken.

**Habitat:** South America.

### Description:

Capsicum occurs as entire fruits attached to and mixed with pedicles and calyxes. Capsicum is a *berry*. The outline varies from oval to ovate to oblong-conical. The base is constricted and is attached to a pedicel and a persistent five-toothed calyx, or is free from these. The apex is acuminate or acute. The fruits vary greatly in size. Mexican capsicums measure 19 mm. or less in length and 6 mm. or less in diameter. Mombassa capsicums measure 18 mm. or less in length and 6 mm. or less in diameter. Sierra Leone capsicums measure 19 mm. or less in length and 6 mm. or less in diameter. Nyassaland capsicums measure 21 mm. or less in length and 7 mm. or less in diameter. African capsicums measure 26 mm. in length and 10 mm. in diameter. The colors of the different varieties vary. The Mexican variety is deep red; the Mombassa variety is mostly light red; the Sierra Leone variety is light red, yellow and brown; the Nyassaland variety is red, yellow; the African variety is yellowish brown, red, gray and greenish red. The *epicarp* is thin and tough. The seeds are compressed and pointed. The *odor* is aromatic. The *taste* is pungent and warming.

**Constituents:** Proximate principles (capsaicin, capsaicin, etc.), red coloring matter, wax, resin, fixed and volatile oils, acids.

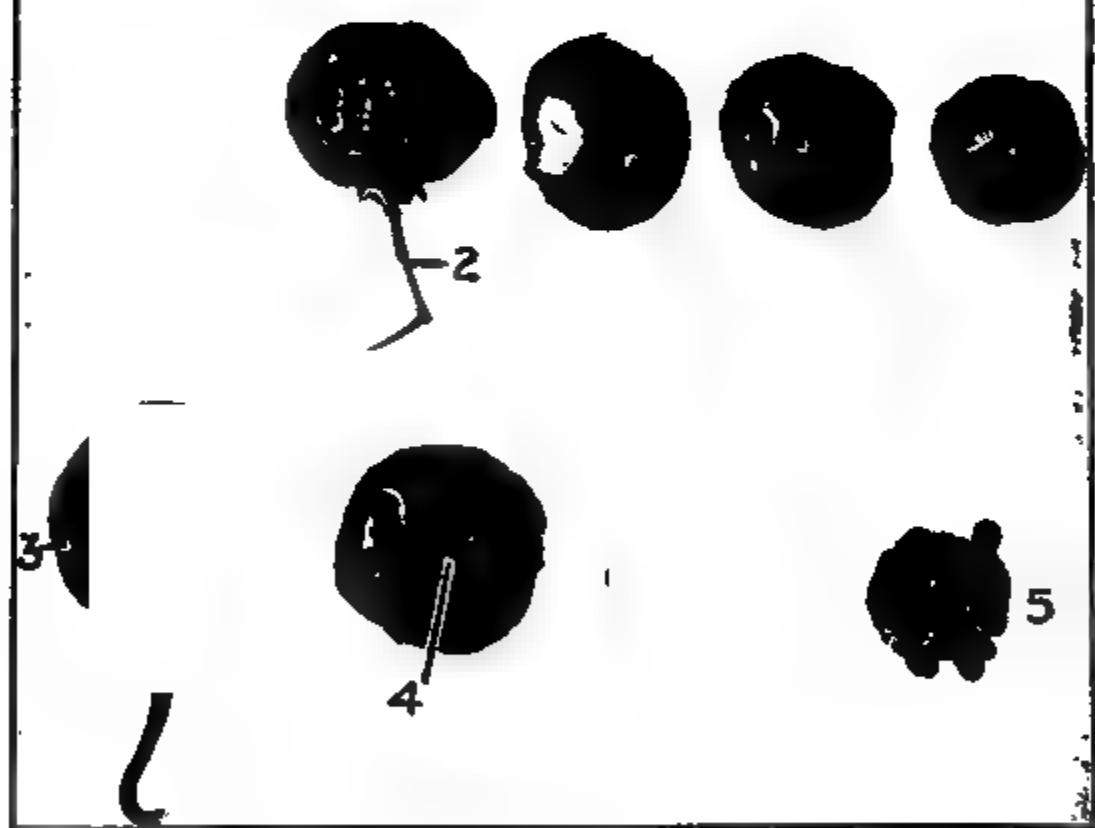
### Preparations:

Emplastrum Capsici (from Oleoresin).

Oleoresina Capsici; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Tinctura Capsici; Dose, 0.5 mil (8 min.).

Tinctura Capsici et Myrrhæ N. F.; Dose, 2 mils (30 min.).



## SOLANUM

1. Fruits of variable size. 2. Pedicel and persistent calyx.  
3. Sunken surface of the fruit. 4. Pedicle scar. 5. Seeds.

## **SOLANUM (Solan.) N. F.**

**English name:** Solanum.

**Synonyms:** Horse-nettle Berries.

**Botanical origin:** *Solanum carolinense* Linné. (Fam. *Solanaceæ*.)

**Part used:** Ripe fruit.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Ontario to Illinois, south to Florida and Texas.

### **Description:**

*Solanum* occurs as entire and broken fruits. It is a berry. The outline varies from globose to subglobose. The fruits measure 2 cm. or less in width and 15 mm. in length. The color varies from light yellow to orange and to reddish brown. The base is frequently attached to a pedicel bearing a persistent calyx. The surface is sunken and shiny and the base frequently has a pedicle scar. The pericarp is thin and brittle. The fruit is two-celled and many-seeded. The seeds are flattened, slightly reniform and shiny. The odor is aromatic. The taste is bitter and acrid.

**Constituents:** Alkaloids (solanine, solanidine), fat, resin, volatile oil, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Solani; Dose, 4 mils (1 fl. dr.).

## **COCCULUS INDICUS**

1. Fruits of variable size. 2. Side view of fruit showing the reniform outline. 3. Longitudinal section of the fruit with endosperm removed. 4. Cross-section of fruit with endosperm. 5. Cross-section free of endosperm.

## **COCCULUS INDICUS (Coccul. Ind.) N. F.**

**English name:** Coccus Indicus.

**Synonyms:** Fish-berry, Indian Berry.

**Botanical origin:** *Anamirta Cocculus* (Linné) Wight et Arnott. (Fam. *Menispermaceæ*.)

**Part used:** Dried fruit.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Ceylon, East Indies.

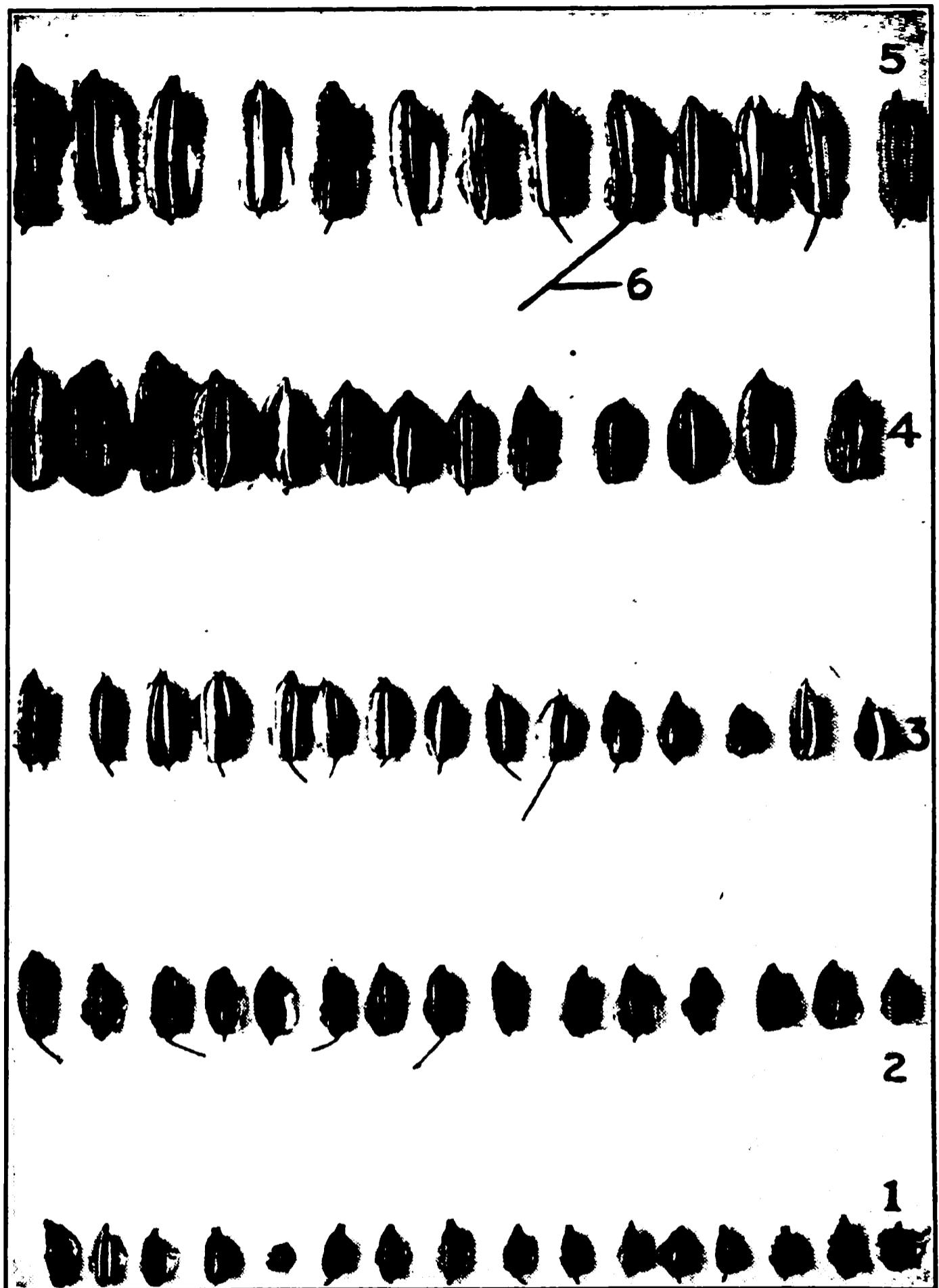
### **Description:**

*Coccus indicus* occurs as entire fruits. It is a berry. The *outline* is broadly reniform. The *fruits* measure 13 mm. or less in length and 10 mm. or less in width. The *color* varies from light gray to brownish black. The *surface* is rough and wrinkled. The *convex surface* has an indistinct ridge which extends from the circular stalk scar to the slightly beaked apex. This ridge appears as a narrow, fibrous band when the outer coat has been removed. The fruit is one-celled and one-seeded. The *pericarp* is fibrous. The *seeds* are yellowish gray and urn-shaped; on cross-sections they are crescent-shaped. The *odor* is not characteristic. The *taste* is bitter and oily.

**Constituents:** Fat, alkaloids (menispermine, para-menispermine), picrotoxin, cocculin, picrotoxic acid, etc.

### **Preparations:**

Tinctura Cocculi Indici (for external use).



## Fœniculum

1, Wild fennel (unofficial). 2, Russian fennel. 3, Levant fennel. 4, German fennel. 5, Spanish fennel. 6, Pedicle.

## Fœniculum (Fœnic.) U. S. P.

**English name:** Fennel.

**Synonyms:** Fennel Seed.

**Botanical origin:** *Fœniculum vulgare* Mille. (Fam. *Umbelliferae*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 4 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Southern Europe and Asia; United States, New Jersey, south to Florida and Texas.

### Description:

Fennel occurs as mericarps and cremocarps. Fennel is a *cremocarp*. The *outline* varies from elliptical to oblong-cylindrical. The *cremocarps* are 16 mm. or less in length, 6 mm. or less in width, and 3 mm. or less in thickness. The *color* varies from yellow to greenish brown. The *dorsal surface* has three strongly elevated ribs; the *lateral surface* has two ribs. The *commissural surface* is slightly grooved and has alternate bands of a light and dark color. The *apex* of each mericarp has slender stylopodium. The *odor* is aromatic. The *taste* is sweet and pungent.

**Constituents:** Volatile oil, fixed oil, sugar, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

*Aqua Fœniculi*; Dose, 15 mils (4 fl. drs.).

*Infusum Sennæ Compositum*; Dose, 120 mils (4 fl. ozs.).

*Oleum Fœniculi*; Dose, 0.2 mils (3 min.).

## **CARUM**

1, Fruits of variable size. 2, Several mericarps.

## **CARUM (Car.) U. S. P.**

**English name:** Caraway.

**Synonyms:** Caraway Seed.

**Botanical origin:** *Carum Carvi* Linné. (Fam. *Umbelliferae*.)

**Part used:** Dried fruit.

**Impurities:** Not more than 3 per cent. of other fruits, seeds or foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** North America, south to Pennsylvania and Colorado.

### **Description:**

Caraway occurs as a mixture of entire mericarps and cremocarps. Caraway is a *cremocarp*. The outline of the cremocarps is oblong; it tapers toward either end and is laterally compressed. The mericarps are crescent-shaped. The mericarps measure 8 mm. or less in length and 2 mm. or less in diameter. The color varies from gray to purplish brown. The *outer curved surface* has five yellowish narrow ribs, between which are five indistinct ribs. The *commissural surface* has a light-colored ridge in the center parallel to its length. The mericarps are five-angled on cross-section. The layers are not distinguishable. The *odor* is aromatic. The *taste* is pungent.

**Constituents:** Fat, resin, gum, tannin, sugar, volatile oil, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Oleum Cari; Dose, 0.2 mil (3 min.).

## **ANGELICÆ FRUCTUS**

1, European angelica. 2, Several mericarps showing the three large central ribs. 3, American angelica (*Angelica atropurpurea*).

## **ANGELICÆ FRUCTUS (Angel. Fruct.) N. F.**

**English name:** Angelica Fruit.

**Synonyms:** European Angelica Seed.

**Botanical origin:** *Angelica Archangelica* Linné and of other species of *Angelica*. (Fam. *Umbelliferæ*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 3 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Northern Europe.

### **Description:**

Angelica fruit occurs as mericarps, rarely as cremocarps. Angelica is a *cremocarp*. The outline varies from oval to oblong. The cremocarps measure 6 mm. or less in width, 2.5 mm. or less in thickness, and 10 mm. or less in length. The color varies from greenish yellow to greenish brown. The *dorsal surface* has three large elevated ribs, the *lateral surface* two broad ribs. The *commissural surface* is grooved and the *apex* of the cremocarps has five minute calyx teeth. The *base* of each mericarp is slightly notched. The *odor* is strongly aromatic. The *taste* is tingling and very strongly pungent.

**Constituents:** Volatile oil, bitter principle, resin, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

None.

## **ANISUM**

1, Italian aniseed in mass. 2, Several cremocarps and  
mericarps. 3, Russian aniseed. 4, Several cremocarps  
and mericarps.

## **ANISUM (Anis.) U. S. P.**

**English name:** Anise.

**Synonyms:** Aniseed.

**Botanical origin:** *Pimpinella Anisum* Linné. (Fam. *Umbelliferæ*.)

**Part used:** Ripe fruit, dried.

**Impurities:** Not more than 3 per cent. of foreign seeds or other vegetable matter.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Asia, Europe, and Northern Africa.

### **Description:**

Anise occurs as a mixture of entire cremocarps and mericarps attached to or separated from long pedicels. Anise is a *cremocarp*. The outline of the cremocarps and mericarps is ovate-lanceolate. The cremocarps measure 7 mm. or less in length and 3 mm. or less in width at the base. The Russian anise is uniformly shorter and broader than the Spanish variety. The color of the Italian, Spanish and Levant anise is grayish yellow, of the Russian anise dark grayish brown. The outer surface has five light yellow ribs. The apex is constricted and surmounted by a disk and a persistent style. The layers of the mericarp are not distinct. The odor is sweet aromatic. The taste is pungent.

**Constituents:** Volatile oil, fixed oil, sugar, resin, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

*Aqua Anisi*; Dose, 15 mils (4 fl. drs.).

*Elixir Anisi N. F.*; Dose (Infant's) 1 mil (15 min.).

*Oleum Anisi*; Dose, 0.2 mil (3 min.).

*Spiritus Anisi* (from Oil); Dose, 2 mils (30 min.).

## **PETROSELINUM**

1. Numerous fruits. 2. Several cremocarps and mericarps.

## **PETROSELINUM (Petrosel.) U. S. P.**

**English name:** Parsley Fruit.

**Synonyms:** Parsley Seed.

**Botanical origin:** *Petroselinum sativum* Hoffmann.  
(Fam. *Umbelliferæ*.)

**Part used:** Ripe fruit, dried.

**Impurities:** Not more than 5 per cent. of foreign seeds  
or other matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Southern Europe; North America, Ontario  
south to North Carolina and Texas.

### **Description:**

Parsley Fruit occurs as a mixture of entire mericarps and cremocarps. Parsley is a *cremocarp*. The outline of the cremocarps is ovate, of the mericarps curved and tapering. The mericarps measure 4 mm. or less in length and 2 mm. or less in diameter at the base. The color varies from yellow to greenish brown. The outer surface has five yellow narrow ribs, between which the surface is elevated and rounded. The commissural surface is slightly channeled. The odor is aromatic. The taste is pungent.

**Constituents:** Fixed oil and volatile oil containing apiol, tannin, resin, glucoside, etc.

**Dose:** None given.

### **Preparations:**

Oleoresina Petroselini; Dose, 0.5 mil (8 min.).

## **CONIUM**

1, Many fruits of variable size. 2, Several cremocarps.  
3, Pedicel. 4, Small fruits.

## **CONIUM N. F.**

**English name:** Conium.

**Synonyms:** Poison Hemlock.

**Botanical origin:** *Conium maculatum* Linné. (Fam. *Umbelliferæ*.)

**Part used:** Unripe fruit.

**Impurities:** None given officially.

**Assay:** Not less than 0.5 per cent. of coniine. Unfit for use after being kept for more than two years.

**Ash:** Not more than 8 per cent.

**Habitat:** Europe, Asia, North America, south to Mexico.

### **Description:**

Conium occurs as a mixture of entire mericarps and cremocarps. Conium is a *cremocarp*. The outline of the cremocarps is broadly ovate. The fruits measure 3 mm. or less in length and 3 mm. or less in diameter. The color varies from green to grayish brown. The *outer convex surface* of the mericarp has five light yellow wavy ribs, between which the surface is wrinkled. The *commissural surface* is concave and longitudinally grooved. Sections of the mericarps are angled. The layers must be studied microscopically. The *odor* is mouse-like when moistened with an alkali. The *taste* is slightly bitter and acrid.

**Constituents:** Alkaloids (coniine, conhydrine, etc.), fixed oil and volatile oil, etc.

**Dose:** 0.2 Gm. (3 grains).

### **Preparations:**

*Extractum Conii*; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).  
*Fluidextractum Conii*; Dose, 0.2 mil (3 min.).

## **API FRUCTUS**

1. Numerous fruits. 2. Cremocarp. 3. Mericarp.

## **APII FRUCTUS (Apium Fruct.) N. F.**

**English name:** Celery Fruit.

**Synonyms:** Celery Seed.

**Botanical origin:** *Apium graveolens* Linné. (Fam. *Umbelliferæ*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 10 per cent. of foreign fruit or other matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Europe; widely cultivated.

**Description:**

Celery Fruit occurs as a mixture of entire mericarps and cremocarps. Celery is a *cremocarp*. The outline of the mericarps is nearly globular. The mericarps are curved, and when viewed from the outer surface they are ovate. The cremocarps measure 2 mm. or less in length and 2 mm. or less in diameter. The mericarps measure 1.5 mm. or less in length and 1 mm. or less in width. The color is dark brown. The outer surface has five light yellow ribs and is convex. The commissural surface is nearly flat and frequently has a slender stylopodium adhering to it. The layers of the mericarp are not distinguishable. The odor is aromatic. The taste is pungent.

**Constituents:** Volatile and fixed oils, etc.

**Dose:** 2 Gm. (30 grains).

**Preparations:**

Fluidextractum Apii Fructus; Dose, 2 mils (30 min.).

## **CORIANDRUM**

1. Small coriander    2. Coriander of a normal size    3.  
Indian coriander (not official).

## **CORIANDRUM (Coriand.) U. S. P.**

**English name:** Coriander.

**Synonyms:** Coriander Seed.

**Botanical origin:** *Coriandrum sativum* Linné. (Fam. *Umbelliferæ*.)

**Part used:** Ripe fruit.

**Impurities:** Not more than 5 per cent. of other fruits, seeds, or foreign matter.

**Assay:** Not less than 0.5 per cent. of ether-soluble volatile extractive.

**Ash:** Not more than 7 per cent.

**Habitat:** Asia; cultivated extensively.

### **Description:**

Coriander occurs as entire cremocarps. Coriander is a *cremocarp*. The outline of the cremocarps is globular. They measure up to 6 mm. in diameter. The color of the base is light yellowish brown, of the upper portion reddish purple. The outer surface of the mericarps has five thick, straight ribs and four slightly elevated, wavy ribs. The apex has a short stylopodium and five minute calyx teeth. The commissural surface is concave. The layers are not distinct. The odor is aromatic. The taste is pungent.

**Constituents:** Volatile and fixed oils, mucilage, malic acid, tannin, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Oleum Coriandri; Dose, 0.2 mil (3 min.).

## **CASSIA FISTULA**

1, 2, Grooves and ridges on one side of the fruit. 3, Short stout pedicle. 3 (lower), Shows the cross partitions and several seeds. 4, Round disk (portion) covered with pulp. 5, Shiny seed.

## **CASSIA FISTULA (Cass. Fist.) N. F.**

**English name:** Cassia Fistula.

**Synonyms:** Purging Cassia, Cassia Pods.

**Botanical origin:** *Cathartocarpus Fistula* (Linné)  
Persoon. (Fam. Leguminosæ.)

**Part used:** Dried fruit.

**Impurities:** None given.

**Assay:** None given.

**Ash:** None given.

**Habitat:** East and West Indies, Africa and South America.

### **Description:**

Cassia fistula occurs as a mixture of entire and broken fruits. It is a legume. The outline is oblong-cylindrical. The legumes measure 7 dm. or less in length and 27 mm. or less in diameter. The color varies from reddish brown to nearly black. The base of the capsule is constricted and is frequently attached to a portion of the short, stout pedicel. The apex is acute. The surface of one side of the legume has three grooves and two rounded ridges running parallel to its length. The opposite surface has two shallow grooves and one rounded parallel ridge. The curved surface is sunken and fissured. The legume is divided transversely into numerous compartments, each containing a hard, shiny, brownish black, flattened seed imbedded in a black, sweet pulp. The pericarp is fibrous. The odor is aromatic. The taste is sweet.

**Constituents:** Sugar, mucilage, pectin, tannin, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

*Syrupus Rhamni Catharticæ*; Dose, 8 mils (2 fl. drs.).

## **VANILLA**

1, 2, 3, 4, 5, 6, Types of commercial vanilla beans. 7,  
Wild vanilla bean.

## VANILLA N. F.

**English name:** Vanilla.

**Synonyms:** Vanilla Bean.

**Botanical origin:** *Vanilla planifolia* Andrews. (Fam. *Orchidaceæ*.)

**Part used:** Cured, full-grown, unripe fruit.

**Impurities:** None given officially.

**Assay:** Extractive yielded to dilute alcohol should not be less than 12 per cent.

**Ash:** Not more than 6 per cent.

**Habitat:** Eastern Mexico; cultivated extensively in tropics.

### Description:

*Vanilla* occurs as entire fruits arranged in bundles and tied with thread. *Vanilla* is a *capsule*. The *outline* is linear; the narrowest portion is a curved or twisted base; from this point the pod expands, then narrows abruptly at the apex. The *fruits* measure 28 cm. or less in length and 10 mm. or less in diameter. The *color* varies from brownish black to black. The *surface* is smooth, moist, shiny and longitudinally furrowed; occasionally the surface has isolated brown cork patches and white crystals of vanillin. In some varieties the pods are split longitudinally and the surface is dry. The *epicarp* is thick and tough. The *sarcocarp* is soft and fleshy. The *endocarp* has placentaæ with numerous seeds. The *seeds* are irregular in outline, brownish black and reticulate. The *odor* is aromatic. The *taste* is pungent.

**Constituents:** Vanillin, vanillinic acid, balsam, resin, fixed oil, etc.

### Preparations:

Tinctura Vanillæ (flavoring agent).

## **PAPAVERIS FRUCTUS**

1. Yellowish white spotted placenta. 2. Persistent stigma disk. 3. Cross-section of a fruit.

## **PAPAVERIS FRUCTUS (Papav. Fruct.) N. F.**

**English name:** Poppy Capsules.

**Synonyms:** Poppy Fruits.

**Botanical origin:** *Papaver somniferum* Linné. (Fam. *Papaveraceæ*.)

**Part used:** Unripe fruit, free of seeds.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 10 per cent.

**Habitat:** Western Asia; extensively cultivated in Asia, China, etc.

### **Description:**

Poppy Capsules occur entire or crushed. Poppy fruits are *capsules*. The *base* is constricted and stem-like and is frequently united with a short, yellow, fibrous stalk. They have a maximum diameter of 6 cm. The *apex* has a persistent stigma disk with from seven to fifteen stigma rays. The *outline* varies from oval to globular. The *size* is variable. The *surface* is yellowish and has scattered black spots and as many longitudinal furrows as there are rays to the stigma. The *pericarp* is thick and grayish yellow. The *placentæ* are yellowish brown, dotted with numerous brown spots, which are the points of attachment of the seed to the placenta. The *seeds* must not be used. They are white, reniform and reticulate. The *odor* is not distinct. The *taste* is bitter.

**Constituents:** Small quantities of opium bases and other opium constituents.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

Syrupus Papaveris; Dose, 4 mils (1 fl. dr.).

## **XANTHOXYLI FRUCTUS**

1. Numerous fruits of southern prickly ash, the seeds are rough and pitted. 2, 3, Clusters of sessile follicles of the southern variety. 4, Stalked capsaules of the northern variety 5, Smooth seed of the northern variety.

## **XANTHOXYLI FRUCTUS (Xanthox. Fruct.) N. F.**

**English name:** Prickly Ash Berries.

**Synonyms:** None.

**Botanical origin:** *Xanthoxylum Clava-Herculis* Linné  
and *Xanthoxylum americanum* Miller. (Fam.  
*Rutaceæ*.)

**Part used:** Dried fruit.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Virginia to Arkansas, south to Florida and Texas.

### **Description:**

Prickly Ash Berries occur as a mixture of entire fruits with follicles, solitary or in clusters, and usually separated from the seeds. Prickly ash is a *follicle*. The *outline* of the capsules is globular to globose-oblong. They measure 8 mm. or less in length. The *color* varies from yellow to greenish brown. The *base* has a small scar and is sessile. The *apex* is usually split along both sides, and the split edges turn inward. The *outer surface* of the follicle is rough, and has numerous circular, depressed oil cavities. The *inner surface* of the follicle is smooth. The *seeds* are black, shiny and wrinkled. The outer layer of the seed is black; the inner layer brown, the central part hollow. The *odor* is aromatic. The *taste* is strongly pungent.

**Constituents:** Not investigated; probably same as of the bark.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

None.

## **JUNIPERUS**

1, Mass of fruits. 2, Triangular depression at the apex.  
3, Bracts at the base of the fruit. 4, Fruit cut to show  
the three seeds. 5, A seed. 6, A leaf.

## JUNIPERUS (Junip.) N. F.

**English name:** Juniper Berries.

**Synonyms:** Horse Savin Berries.

**Botanical origin:** *Juniperus communis* Linné. (Fam. *Pinaceæ*.)

**Part used:** Ripe fruit.

**Impurities:** Old or insect-infected fruit, which should be rejected.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Europe, Asia, North America, south to Georgia and New Mexico.

### Description:

Juniper Berries occur as entire fruits. Juniper is a *galbulus*. The outline varies from globular to subglobular. The fruits measure 1 cm. or less in diameter. The color varies from dark red to purple; frequently the surface has a grayish bloom. The base is attached to a short pedicle having six bracts. The apex has a triangular depression marking the line of union of the three scales forming the fruit. The surface is smooth, shiny, even or sunken. The outer layers of the fruit are greenish brown and spongy. The three seeds are three-sided and acute above, and are surrounded by the spongy outer layers of the fruit. The odor is aromatic. The taste is sweet and pungent.

**Constituents:** Volatile oil, resin, proteids, coloring matter, acids, etc.

**Dose:** 4 Gm. (1 drachm).

### Preparations:

Fluidextractum Juniperi; Dose, 4 mils (1 fl. dr.).

Oleum Juniperi U. S. P.; Dose, 0.2 mil (3 min.).

Spiritus Juniperi U. S. P.; Dose, 2 mils (30 min.).

Spiritus Juniperi Compositus U. S. P.; Dose, 10 mils (2  $\frac{1}{2}$  fl. drs.).

## **HUMULUS**

- 1, Three fruits of variable size. 2, Flexuous and hairy rachis. 3, Incurved margin of the bract inclosing a seed
- 4, Fragments of the leaf.

## **HUMULUS (Humul.) U. S. P.**

**English name:** Hops.

**Synonyms:** Lupulus.

**Botanical origin:** *Humulus Lupulus* Linné. (Fam. *Moraceæ*.)

**Part used:** Dried fruit.

**Impurities:** Not more than 2 per cent. of stems, leaves, or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** Europe, Asia; extensively cultivated in eastern United States.

### **Description:**

Hops occurs as a mixture of entire compressed and broken fruits. Hops is a *strobilus*. The outline varies from ovate to oblong-cylindrical. The fruits measure 5.8 cm. or less in length and 3 cm. or less in width. The color varies from yellowish green to yellowish brown. The bracts are imbricated in the fruit. The individual bracts are thin and papery; the veins are elevated, one margin is flat, and the other is incurved and encloses a rose-colored achene. The outline of the bracts varies from nearly rotund to oblong-ovate. The rachis is flexuous and hairy. The odor is aromatic. The taste is pungent and bitter.

**Constituents:** Volatile oil, resin, tannin, wax, choline, pectin, asparagin, etc.

**Dose:** 2 Gm. (30 grains).

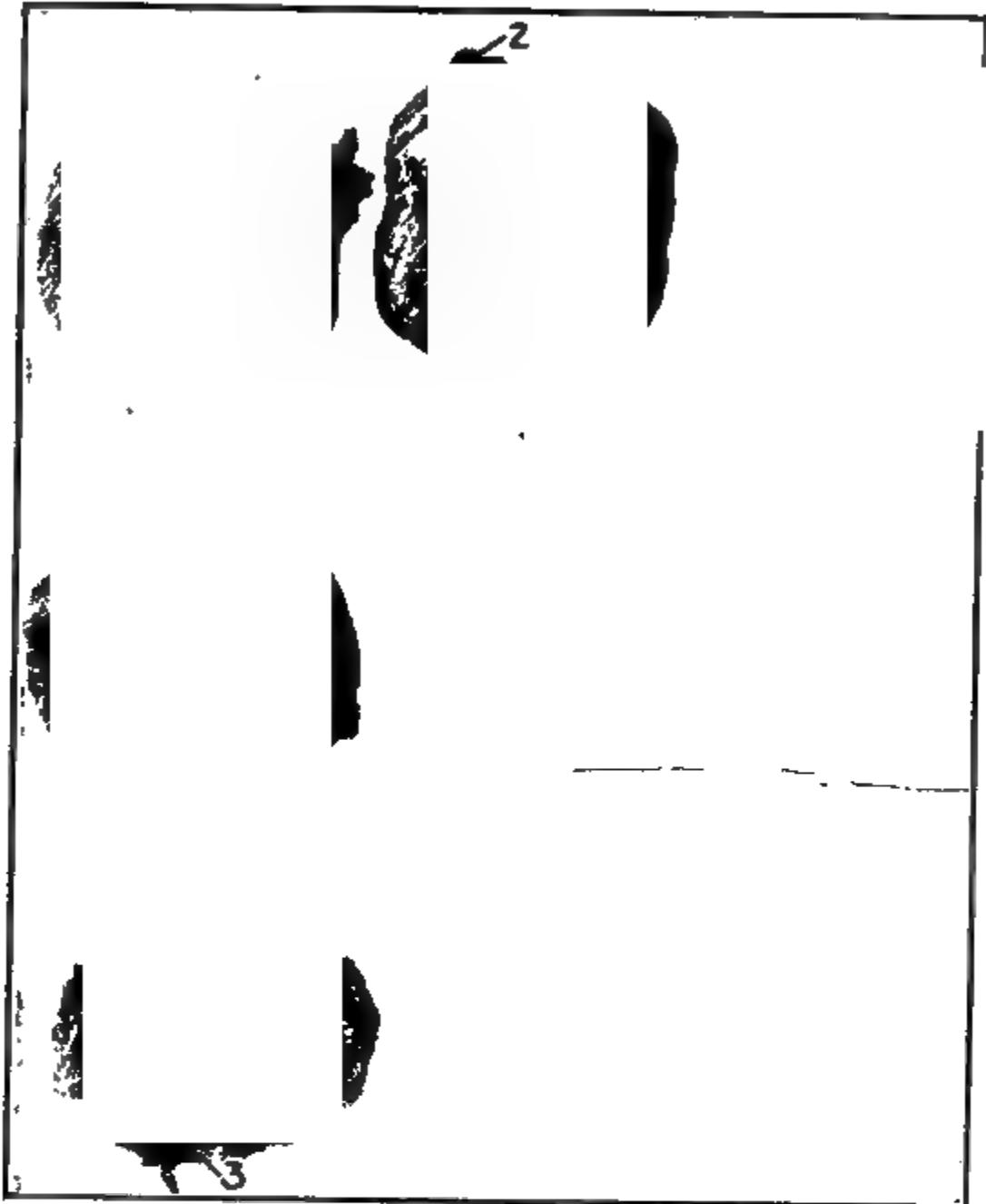
### **Preparations:**

Elixir Humuli N. F.; Dose, 8 mils (2 fl. drs.).

Fluidextractum Humuli N. F.; Dose, 2 mils (30 min.).

Lupulinum; Dose, 0.5 Gm. (8 grains).

Tinctura Humuli; Dose, 4 mils (1 fl. dr.).



## FICUS

1 and 2, Several figs. 3, Fig cut to show seeds

## FICUS N. F.

**English name:** Fig.

**Synonyms:** None.

**Botanical origin:** *Ficus Carica* Linné. (Fam. *Moraceæ*.)

**Part used:** Fruit, partially dried.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Western Asia; cultivated in California.

### Description:

Figs occur as the compressed entire fruits. The fig is a *syconium*. The outline varies from globular to obovate. Figs measure 8 cm. or less in length and 6 cm. or less in width. The color varies from yellow to light brown. The surface is smooth, moist, or dry; if dry, the surface may be powdery with sugar. It is longitudinally striated and wrinkled. The base is constricted into a short, stalk-like portion. The outer layer of the *torus* is tough and pliable, the inner layer soft and sticky. The inner surface has numerous seeds. The seeds are shiny, yellowish brown achenes which measure 0.5 mm. or less in length. The odor of figs is aromatic. The taste is very sweet.

**Constituents:** Glucose, gum, fat, peptonizing ferment (cradin), etc.

**Dose:** None given.

### Preparations:

Syrupus Ficorum Compositum; Dose, 4 mils (1 fl. dr.).

## **RUBI FRUCTUS**

1. Several fruits. 2. Cross-section of a fruit. 3. Longitudinal section of a fruit.

## RUBI FRUCTUS N. F.

**English name:** Blackberries.

**Synonyms:** High Bush Blackberries.

**Botanical origin:** *Rubus nigrobaccus* Bailey or *Rubus villosus* Aiton. (Fam. Rosaceæ.)

**Part used:** Ripe fruit.

**Impurities:** None given.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Europe; cultivated in United States.

### Description:

Fresh Blackberries occur in the entire condition. The blackberry is an *aggregate fruit*. The *outline* is oval or globate. The *berry* measures 25 mm. or less in length. The *drupelets* are numerous, black, and shining; they measure 5 mm. or less in diameter. The *pericarp* is smooth. The *mesocarp* is juicy; the juice is purplish red in color. The *endocarp* is black and hard, and encloses one seed. The *torus* is fleshy and elongated. In cross-sections it is nearly cylindrical. The *odor* is slight. The *taste* is sweet.

**Dose:** None given officially.

### Preparations:

Cordiale Rubi Fructus; Dose 8 mils (2 fl. drs.).  
Syrupus Rubi Fructus (flavoring agent).

## RUBI IDÆI FRUCTUS

1. Mass of fruits. 2. Outer surface of the fruit. 3.  
Under surface. 4. Longitudinal section.

## RUBI IDÆI FRUCTUS N. F.

**English name:** Raspberries.

**Synonyms:** Red Raspberries.

**Botanical origin:** *Rubus Idæus* Linné or *Rubus strigosus* Michaux. (Fam. Rosaceæ.)

**Part used:** Fresh ripe fruit.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Cultivated in United States.

### Description:

Raspberries occur in the entire condition. The fruit is aggregate. The outline is elongated-hemispheric. It measures 2 cm. or less in length. The drupelets are numerous and light red, and measure 4 mm. or less in length. The pericarps are hairy. The mesocarp is juicy; the juice is red in color. The endocarp is bony and encloses one seed. The inner surface of the fruit is hollow. The odor is aromatic. The taste is sweet.

**Constituents:** Malic and citric acids, sugar, coloring matter, etc.

### Preparations:

Syrupus Rubi Idæi (flavoring agent).

### **TAMAKINDUS**

1. Entire fruit.
2. Fruit with the pericarp removed.
3. Mass of pulp.
4. Membrane which incloses the seed.
5. Seed.

## **TAMARINDUS (Tamarind.) N. F.**

**English name:** Tamarind.

**Synonyms:** Tamarind Pulp.

**Botanical origin:** *Tamarindus indica* Linné. (Fam. *Leguminosæ*.)

**Part used:** Preserved pulp of the fruit.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** India, Africa, and West Indies.

### **Description:**

Tamarind occurs as a mass of fibers, pulp and seed. Tamarind is a capsule. When entire the outline is oblong and constricted transversely. When the pericarp is removed the pulp is reddish brown and the fibrous strands are distinct. In the commercial drug this portion is crushed and pressed into cakes or irregular masses. The crushed portion consists of fibers, pulp and seeds. The fibers are yellowish brown and tough. The pulp is reddish brown and soft. The seeds are compressed, reddish brown and shiny, and the convex central part is surrounded by a nearly flat marginal portion. The membrane which usually encloses the seed is yellowish and tough. The odor is aromatic. The taste is sweet and sour.

**Constituents:** Citric, tartaric and malic acids, potassium bitartrate, sugar, pectin, etc.

**Dose:** 15 Gm. (4 drachms).

### **Preparations:**

None.

## **SUCCUS CITRI (Suc. Cit.) N. F.**

**English name:** Lime Juice.

**Synonyms:** None.

**Botanical origin:** *Citrus medica acida* (Roxburgh)  
Bonavia. (Fam. *Rutaceæ*.)

**Part used:** Expressed juice of the ripe fruit.

**Impurities:** None officially mentioned.

**Assay:** 100 mils (Cc.) contains 5 to 10 Gm. of total acids calculated as crystallized citric acid.

**Ash:** None officially stated.

### **Description:**

Clear to slightly turbid liquid, of yellowish green color, aromatic odor and acid taste. Specific gravity 1.025 to 1.040 at 25° O.

**Constituents:** Citric acid, etc.

**Dose:** None stated officially.

### **Preparations:**

*Succus Citri et Pepsinum*; Dose, 8 mils (2 fl. drs.).

## **SUCCUS POMORUM (Suc. Pomor.) N. F.**

**English name:** Fresh Apple Juice.

**Synonyms:** Fresh Cider.

**Botanical origin:** *Pyrus Malus* Linné. (Fam. *Rosaceæ*.)

**Part used:** Juice of sound, ripe, sour apples.

**Impurities:** None.

**Assay:** None given.

**Ash:** None mentioned.

**Description:**

Well known to all.

**Constituents:** Malic acid, etc.

**Dose:** None given.

**Preparations:**

Enters into Extractum Ferri Pomati.

## CHAPTER XIV

### SEEDS

**I**N the study of seeds the following must be considered: Occurrence, class, outline, size, color, surface, cross-section, odor and taste.

**1. Occurrence.** Seeds occur in the entire condition (usual condition), as in calabar bean, or broken, as in strophanthus, or crushed and molded into sticks, as in guarana, or as separated parts of seed, as in kola and mace.

**2. Class.** This refers to whether the embryo (young plant) comprises the entire seed with the exception of the outer protective layers, in which case it is said to be *exalbuminous*, or whether the embryo only partially fills the space within the seed coats, the remaining space being occupied by stored food. Seeds having an embryo surrounded by stored food are said to be *albuminous*. All seeds, then, are either exalbuminous or albuminous. In the present volume the seeds are divided into these two classes: (1) Albuminous and (2) Exalbuminous Seeds.

*Nux vomica* seed is a typical albuminous seed. The embryo is here shown surrounded by the stored food.

*Physostigma* is a typical exalbuminous seed. The embryo completely fills the space within the seed coats.

**3. Outline.** The outlines of seeds vary greatly. In most cases the outline is made up of curved surfaces, as in nutmeg, or of plane surfaces, as in staphisagria, or of plane and curved surfaces, as in coffee.

The characteristic outline of each seed is given in the description.

**4. Size.** The length varies from 38 mm., as in *physostigma*, to less than a millimeter, as in the smaller seeds of black mustard. The width varies from 30 mm., as in *nux vomica*, to less than a milli-

meter, as in black mustard. The thickness varies from 24 mm., as in Penang nutmeg, to less than one-half a millimeter, as in the tips of brown strophanthus.

5. **Color.** The colors of the different seeds are characteristic for each seed. Grays, yellows, browns and blacks are the most common colors.

6. **Surface.** The surface of brown mustard is finely reticulate; of staphisagria, coarsely reticulate; of nutmeg, furrowed; of coffee, grooved on the flat side; of delphinium, winged. In addition the surface is hairy, as in *nux vomica*, brown and green strophanthus, sweet almond and in some varieties of pumpkin seed. Or the surface may be glabrous (free of hairs), as in calabar bean, yellow and brown mustard, coffee, colchicum seed, linseed and cardamom seed.

7. **Cross-section.** The cross-section of nutmeg is mottled; of coffee, folded; of calabar bean, hollow; in colchicum and most seeds it is solid.

8. **Odor.** The odor of nutmegs, cardamom, coffee and mace is strongly aromatic. Strophanthus, pumpkin and sweet almonds are slightly aromatic. White and black mustard are aromatic when moistened. *Nux vomica*, ignatia, staphisagria, delphinium, colchicum, linseed and physostigma have no characteristic odor.

9. **Taste.** The taste of nutmeg, cardamom and mace is pungent; of white and black mustard pungent when moist. Sweet almond and linseed are sweet. Kola is astringent. *Nux vomica*, ignatia, brown and green strophanthus are strongly bitter. Guarana is bitter and astringent. Staphisagria, delphinium and colchicum seed are bitter and acrid. Kola is astringent and physostigma is acrid.

## **MYRISTICA**

1, Penang nutmegs. 2, Round West India nutmegs. 3, Banda nutmegs. 4, Longitudinal, cross and a broken surface of the seed. 5, Upper part of the seed. 6, Base of the seed. 7, Wormy seed.

## **MYRISTICA (Myrist.) U. S. P.**

**English name:** Myristica.

**Synonyms:** Nutmeg, Round Nutmeg.

**Botanical origin:** *Myristica fragrans* Houttuyn.  
(Fam. *Myristicaceæ*.)

**Part used:** Ripe seeds.

**Impurities:** Reject broken or wormy kernels.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Molucca Islands; cultivated in tropical countries.

### **Description:**

*Myristica* occurs as entire seeds. Nutmeg is an albuminous seed. The base of the seed is sunken and has a slightly convex gray scar dotted with brown. The apex is rounded, and at one side has a circular, sunken brown scar. The outline varies from globular to oval to ellipsoidal. The size of the different varieties of nutmegs differs. The Padang and West Indian nutmegs measure 21 mm. or less in width and 26 mm. or less in length. Banda nutmegs measure 28 mm. or less in length and 21 mm. or less in width. Penang nutmegs measure 30 mm. or less in length and 24 mm. or less in diameter. The color of nutmegs varies from grayish brown to purple. The surface is furrowed and deeply grooved along one side. Cross-sections have a mottled surface. This condition is caused by reddish brown radial lines and by yellow and gray areas. The odor is aromatic. The taste is strongly pungent.

**Constituents:** Volatile and fixed oils, proteids, gum, starch, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Oleum Myristicæ; Dose, 0.2 mil (3 min.).

## **NUX VOMICA**

1, Ceylon nux vomica. 2, Bombay seeds. 3, Singapore seeds. 4, Nux vomica sorts. 5, Cross-sections of the seed. 6, Embryo. 7, Outer layer

## **NUX VOMICA (Nux. Vom.) U. S. P.**

**English name:** Nux Vomica.

**Synonyms:** Dog Buttons, Quaker Buttons, Strychni semen P. I.

**Botanical origin:** *Strychnos Nux-vomica* Linné. (Fam. *Loganiaceæ*.)

**Part used:** Ripe seed.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 2.5 per cent. of alkaloids.

**Ash:** Not more than 3.5 per cent.

**Habitat:** India, East India and China.

### **Description:**

Nux vomica occurs as entire, rarely as broken, seeds. Nux vomica is an albuminous seed. The outline varies from lenticular to oblong. Nux vomica has a maximum width of 30 mm. and a maximum thickness of 6 mm. The texture is bony. The color varies from gray to yellowish gray or green. The surface is smooth and shiny because of appressed hairs; on both of the flat sides there are ridges (raphes) which extend from about the center to the edge. Nux vomica has no fracture. When cut parallel to the flat surfaces the perisperm is separated into two parts and the small embryo with thin yellowish white cotyledons is distinct. The odor is not distinct. The taste is very strong and persistently bitter.

**Constituents:** Alkaloids (strychnine, brucine), fixed oil, proteids, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Extractum Nucis Vomicæ; Dose, 0.015 Gm. ( $\frac{1}{4}$  grain).  
Fluidextractum Nucis Vomicæ; Dose, 0.05 mil (1 min.).  
Tinctura Nucis Vomicæ; Dose, 0.5 mil (8 min.).

## **IGNATIA**

**1, 2.** Numerous seeds. **3.** Depressed stem scar. **4.** Broken surface.

## **IGNATIA (Ignat.) N. F.**

**English name:** Ignatia.

**Synonyms:** St. Ignatius Bean, Ignatia Amara.

**Botanical origin:** *Strychnos Ignatii* Bergius. (Fam. *Loganiaceæ*.)

**Part used:** Ripe seed.

**Impurities:** None given officially.

**Assay:** Not less than 2 per cent. of alkaloids.

**Ash:** Not more than 4 per cent.

**Habitat:** Philippine Islands and parts of China.

### **Description:**

*Ignatia* occurs as entire seeds. *Ignatia* is an albuminous seed. The *base* of the seed is oblique, rounded or concave, and it has a circular, depressed scar. The *apex* is rounded or truncate. The *outline* varies from rotund to oval to oblong to triangular, etc. *Ignatia* measures 31 mm. or less in length and 20 mm. or less in width. The *color* varies from gray to brownish black. The *surface* is dull, rough and concavo-convex; the broken surface is grayish yellow and waxy. The *odor* is not characteristic. The *taste* is very strongly bitter.

**Constituents:** Alkaloids (strychnine, brucine), etc., like nux vomica.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Extractum Ignatiæ; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).  
Tinctura Ignatiæ; Dose, 0.6 mil (10 min.).

## **COFFEA TOSTA**

1, Several seeds of Arabian coffee. 2, Seeds of Arabian coffee of variable size. 3, Liberian coffee. 4, Liberian coffee of variable size. 5, Grooved surface.

## **COFFEA TOSTA (Coff. Tost.) N. F.**

**English name:** Coffee.

**Synonyms:** Roasted Coffee.

**Botanical origin:** *Coffea arabica* Linné or *Coffea liberica* Bulliard. (Fam. Rubiaceæ.)

**Part used:** Ripe seed roasted until it develops a dark-brown color and a characteristic aroma.

**Impurities:** None given officially.

**Assay:** Not less than 1 per cent. of caffeine.

**Ash:** Not less than 3 per cent. nor more than 5 per cent.

**Habitat:** Africa; cultivated in tropical countries (Mocha, Java, Ceylon and Brazil).

### **Description:**

Coffee occurs as entire seeds. Coffee is an albuminous seed. The outline varies from rotund to oval to oblong. The *arabica* variety measures 11 mm. or less in length and 9 mm. or less in width. The *liberica* variety measures 16 mm. or less in length and 12 mm. or less in diameter. The color is yellowish brown. The surface is convex on one side and flat and grooved on the opposite side. The grooved portion is frequently a fragment of the seed coat. On cross-sections the perisperm is in two parts and it is folded and rolled inward. The odor is aromatic. The taste is bitter.

**Constituents:** Caffeine, caffeo-tannic acid, caffeol, sugar, dextrin, fat, proteids, volatile oil, etc.

### **Preparations:**

Fluidextractum Coffæ; Dose, 2 mils (30 min.).

## **STAPHISAGRIA**

1, Numerous fruits. 2, 3, Fruit with several seeds. 4,  
Seeds without the pericarp. 5, Single seed. 6, Stem.

## **STAPHISAGRIA (Staphisag.) U. S. P.**

**English name:** Staphisagria.

**Synonyms:** Stavesacre.

**Botanical origin:** *Delphinium Staphisagria* Linné.  
(Fam. *Ranunculaceæ*.)

**Part used:** Ripe seeds.

**Impurities:** Not more than 2 per cent. of foreign vegetable matter.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Mediterranean Region; cultivated.

### **Description:**

*Staphisagria* occurs as solitary or grouped entire seeds. Stavesacre is an albuminous seed. The outline is variable. One surface is curved, the others plane and angled. One end is tapering or acute, the opposite rounded or truncate. The seeds measure 10 mm. or less in length and 8 mm. or less in width. The color varies from gray to yellow to brown. The surface is coarsely reticulate. The testa is thick. The perisperm is bluish gray. The odor is not distinct. The taste is bitter and acrid.

**Constituents:** Fixed oil, volatile oil, resins, alkaloids (delphinine, delphinoidine, staphisagrine, etc.), proteids, malic acid, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Fluidextractum Staphisagriæ. (Used externally.)



## **DELPHINIUM (Delphin.) N. F.**

**English name:** Larkspur Seed.

**Synonyms:** Field Larkspur, Staggerweed, Knight's-spur.

**Botanical origin:** *Delphinium Consolida* Linné, *Delphinium Ajacis* Linné. (Fam. *Ranunculaceæ*.)

**Part used:** Dried seeds.

**Impurities:** Not more than 5 per cent. of foreign matter.

**Assay:** None given.

**Ash:** Not more than 7 per cent.

**Habitat:** Europe; naturalized in the United States, New Jersey south to Florida, west to Kansas.

**Description:**

Larkspur Seed occurs as entire seeds. It is an albuminous seed. The base is broad and has a circular, depressed scar. The apex is acute. The outline is angularly conical, usually four-sided. The size is variable. The giant ajacis species measure 2 mm. or less in length and 2 mm. or less in width. The dwarf ajacis species measure 1.5 mm. or less in length and 1 mm. or less in width. The consolida species measure 3 mm. or less in length and 2 mm. or less in width. The color of the giant ajacis seeds is dark brownish black, of the dwarf ajacis seeds and consolida seeds the color varies from gray to brown to black. The surface of all varieties is prominently and transversely winged. The outer layer of the seed is dark, the inner layer bluish gray. The odor is not distinct. The taste is bitter.

**Constituents:** Alkaloids, volatile and fixed oils, gum, resin, gallic acid, etc.

**Dose:** Not used internally.

**Preparations:**

Tinctura Delphinii. (Used externally.)

## **COLCHICI SEMEN**

1. Numerous seeds. 2. Seeds of variable size.

## **COLCHICI SEMEN (Colch. Sem.) U. S. P.**

**English name:** Colchicum Seed.

**Synonyms:** Colchici semen P. I.

**Botanical origin:** *Colchicum autumnale* Linné. (Fam. *Liliaceæ*.)

**Part used:** Dried seeds.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 0.45 per cent. of colchicine.

**Ash:** Not more than 8 per cent.

**Habitat:** Central and Southern Europe and Africa.

### **Description:**

Colchicum Seeds occur as entire seeds. Colchicum seed is albuminous. The *base* is pointed and grayish white. The *apex* is rounded. The *outline* varies from globular to subglobular. The seeds measure 3 mm. or less in length and 2.5 mm. or less in width. The *color* varies from yellowish brown to brownish black. The *surface* is dull and granular in appearance. *Sections* of the seed have a thin, dark outer layer, and a gray, hard, bony inner layer. The *odor* is not characteristic. The *taste* is bitter and acrid.

**Constituents:** Colchicine, fixed oil, starch, tannin, resin, etc.

**Dose:** 0.2 Gm. (3 grains).

### **Preparations:**

*Fluidextractum Colchici Seminis*; Dose, 0.2 mil (3 min.).

*Tinctura Colchici Seminis*; Dose, 2 mils (20 min.).

*Vinum Colchici Seminis N. F.*; Dose, 0.6 mil (10 min.).

## **LINUM**

**1. Mass of seeds. 2. Seeds of different form and size.**

## LINUM U. S. P.

**English name:** Linseed.

**Synonyms:** Flaxseed.

**Botanical origin:** *Linum usitatissimum* Linné. (Fam. *Linaceæ*.)

**Part used:** Ripe seeds.

**Impurities:** Not more than 3 per cent. of other seeds or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** Russia, Canada and United States; cultivated in almost all temperate regions.

### **Description:**

Linseed occurs as entire seeds. Linseed is an exalbuminous seed. The base is round. The margin is rounded on one edge and acute on the other. The apex is acuminate on one side and constricted on the other; this gives the seed a beaked appearance. The outline is ovate-lanceolate. The color varies from yellowish to reddish brown. The surface is smooth; the acute edge is yellowish. The testa is brown and thick. The perisperm and cotyledons are yellowish green. The odor is slight. The taste is slightly sweet, mucilaginous and oily.

**Constituents:** Fixed oil, mucilage, proteids, resin, tannin, etc.

**Dose:** None given.

### **Preparations:**

Oleum Lini; Dose, 30 mils (1 fl. oz.).

**STROPHANTHUS (GREEN)**

1, Numerous seeds. 2, Seeds of variable form and size.

# **STROPHANTHUS (Strophanth.) U. S. P.**

## **(1) Green Strophanthus**

**English name:** Strophanthus.

**Synonyms:** Green Strophanthus.

**Botanical origin:** *Strophanthus Kombé* Oliver. (Fam. *Apocynaceæ*.)

**Part used:** Ripe seeds, deprived of the long awns.

**Impurities:** None given in U. S. P.

**Assay (Biological):** If made into the official tincture the minimum lethal dose should not be greater than 0.00006 mil of tincture for each Gm. of weight of frog.

**Ash:** Not more than 5 per cent.

**Habitat:** Tropical Africa.

### **Description:**

Green Strophanthus occurs as entire compressed seeds. Strophanthus is an exalbuminous seed. The base is rounded or slightly tapering. The margin is entire. The apex is tapering, blunt, rounded, or acuminate. The outline varies from oval to oblong to oblong-lanceolate. The seeds measure 22 mm. or less in length and 7 mm. or less in width and 3 mm. or less in thickness. The color is grayish green. The surface is densely hairy and one of the flat surfaces is ridged. The testa is thin and brittle. The endosperm and embryo are white. The odor is distinct. The taste is very strongly bitter.

**Constituents:** Strophanthin (glucoside), fixed oil, choline, starch, proteids, etc.

**Dose:** 0.06 Gm. (1 grain).

### **Preparations:**

Tinctura Strophanthi; Dose, 0.5 mil (8 min.).

**STROPHANTHUS (BROWN)**

1, Mass of seeds. 2, Slender apex of seed. 3, Small seed.

## **STROPHANTHUS (Strophanth.) U. S. P.**

### **(2) Brown Strophanthus**

**English name:** Strophanthus.

**Synonyms:** Brown Strophanthus.

**Botanical origin:** *Strophanthus hispidus* De Candolle.  
(Fam. *Apocynaceæ*.)

**Part used:** Ripe seeds, deprived of the long awns.

**Impurities:** None given in U. S. P.

**Assay (Biological):** If made into the official tincture the minimum lethal dose should not be greater than 0.00006 mil of tincture for each Gm. of weight of frog.

**Ash:** Not more than 5 per cent.

**Habitat:** Tropical Africa.

#### **Description:**

Brown Strophanthus occurs as entire compressed seeds. Brown strophanthus is an exalbuminous seed. The base is blunt, rounded, or tapering. The apex is narrowly acuminate. The outline varies from oblong-lanceolate to ovate-lanceolate. The seeds measure 18 mm. or less in length and 4 mm. or less in width and 2 mm. or less in thickness. The color varies from light to dark brown. The surface is partially or completely hairy, and one of the flat surfaces is ridged. The testa is thin and brittle. The endosperm and embryo are grayish white. The odor is slight. The taste is very strongly bitter.

**Constituents:** Strophanthin (glucoside), fixed oil, choline, starch, proteids, etc.

**Dose:** 0.06 Gm. (1 grain).

#### **Preparations:**

Tinctura Strophanthi; Dose, 0.5 mil (8 min.).

## **CARDAMOMI SEMEN**

1, Mass of seeds. 2, Fruit with seed. 3, Fruit cut to show seed. 4, Capsule containing fruit. 5, Groove on one side of the seed

## **CARDAMOMI SEMEN (Cardam. Sem.) U. S. P.**

**English name:** Cardamom Seed.

**Synonyms:** Cardamom.

**Botanical origin:** *Elettaria Cardamomum* White et Maton. (Fam. *Zingiberaceæ*.)

**Part used:** Dried seeds recently removed from capsules.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 8 per cent.

**Habitat:** India; cultivated in Ceylon.

### **Description:**

Cardamom Seed occurs as entire seeds. It is an albuminous seed. The base has a circular, depressed scar. The apex is rounded. The outline is irregular, three- to four-sided. The seeds measure 5 mm. or less in length and 3 mm. or less in diameter. The color varies from gray to yellow to brown. The surface is deeply grooved on one side, the remaining part irregularly, transversely furrowed and tuberculated. Cross-sections have a brown outer layer and a white inner layer and a small reniform cavity with a small embryo. The odor is aromatic. The taste is pungent.

**Constituents:** Fixed and volatile oils, resin, starch, albuminoids, gum, manganese compounds, etc.

**Dose:** 1 Gm. (15 grains).

### **Preparations:**

*Spiritus Cardamomi Compositus* N. F. (Flavoring agent.)  
*Tinctura Cardamomi*; Dose, 2 mils (30 min.).  
*Tinctura Cardamomi Composita*; Dose, 4 mils (1 fl. dr.).

## **PHYSOSTIGMA**

1, Side view of seed showing the reniform outline. 2, Nearly straight seed. 3, Young curved seed. 4, Groove with remains of white funiculus. 5, Longitudinal section of the seed. 6, Cross-section of the seed.

## **PHYSOSTIGMA (Physostig.) U. S. P.**

**English name:** Physostigma.

**Synonyms:** Calabar Bean, Ordeal Bean.

**Botanical origin:** *Physostigma venenosum* Balfour.  
(Fam. Leguminosæ.)

**Part used:** Dried ripe seed.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 0.15 per cent. of alkaloids.

**Ash:** Not more than 3 per cent.

**Habitat:** Southern Africa; cultivated.

### **Description:**

*Physostigma* occurs as entire straight, rarely as folded, seeds. Calabar bean is an exalbuminous seed. The base is rounded. The margin is grooved on the convex side and is entire on the concave, the plane, or the slightly convex side opposite to the groove. The apex is grooved and rounded. The outline varies from elliptical to oblong to broadly reniform. Calabar bean measures 38 mm. or less in length and 20 mm. or less in width. The color varies from reddish brown to nearly black. The surface is shiny and rough. The convex side is deeply grooved and the apex is grooved. The margins of the groove are rounded and reddish brown. The bottom of the groove is black, and frequently has portions of the white funiculus adhering to it. Longitudinal and cross sections have a thick testa and two white cotyledons surrounding a central cavity. The odor is not distinct. The taste is acrid.

**Constituents:** Alkaloids (physostigmine, calabarine, etc.), physosterin, starch, proteids, gum, fat, etc.

**Dose:** 0.1 Gm. (1½ grains).

### **Preparations:**

Extractum Physostigmatis; Dose, 0.008 Gm. ( $\frac{1}{8}$  grain).  
Tinctura Physostigmatis; Dose, 1 mil (15 min.).

---

## **AMYGDALA DULCIS**

1, Oblong almonds. 2, Inequilateral seeds. 3, Short broad seeds. 4, Longitudinal section showing small embryo. 5, Cross-section of seed showing the space between the cotyledons.

## **AMYGDALA DULCIS (Amygd. Dulc.) U. S. P.**

**English name:** Sweet Almond.

**Synonyms:** None.

**Botanical origin:** *Prunus Amygdalus dulcis* De Candolle. (Fam. Rosaceæ.)

**Part used:** Ripe seeds.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 4 per cent.

**Habitat:** Mediterranean Basin; cultivated in California.

### **Description:**

Sweet Almond occurs as entire seeds. It is an exalbuminous seed. The base of the seed varies from blunt to rounded to inequilateral, and has a depressed scar. The margin curves to the apex, or one side is curved and the other nearly straight. The apex is acute-pointed. The outline varies from ovate to oblong. The seeds measure 4 cm. or less in length and 2 mm. or less in width. The color varies from yellowish to reddish brown. The surface is coarsely furrowed, and hairy cross-sections show a thin testa and a space at the center between the two cotyledons. The cotyledons when separated longitudinally have a white embryo, and on the opposite cotyledon is a cavity formed by the embryo. The odor is slight. The taste is sweet.

**Constituents:** Oil, emulsin, sugar, proteids, etc.

**Dose:** None given.

### **Preparations:**

*Emulsum Amygdalæ.* (Vehicle.)

*Oleum Amygdalæ Expressum.* (Used pharmaceutically.)

## **PEPO**

1, 2, 3, 4, and 5, Various commercial varieties of seed.  
6, Tests removed to show the seed.

## **PEPO U. S. P.**

**English name:** Pepo.

**Synonyms:** Pumpkin Seed.

**Botanical origin:** *Cucurbita Pepo* Linné. (Fam. *Cucurbitaceæ*.)

**Part used:** Ripe seed.

**Impurities:** Not more than 5 per cent. of other substances.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Cultivated in America.

### **Description:**

Pumpkin Seed occurs as entire and compressed seeds. Pumpkin is an exalbuminous seed. The base of the seed is rounded. The margin is entire. The apex is tapering and irregularly truncate. The outline varies from ovate to oval to elliptical. The color is yellowish or grayish white. The sizes of the different varieties of pumpkin seeds are extremely variable. The mammoth variety measure 3.5 cm. or less in length and 2.3 cm. or less in width and 5 mm. or less in thickness. The two flattened surfaces are smooth, and they have a raised portion parallel to the length, with two grooves and a slight ridge between. The remaining portion of the surface is convex. The testa has a tough outer layer and a thin greenish inner layer. The cotyledons are yellowish white and they make up the greater part of the seed. The odor is slight. The taste is sweet and oily.

**Constituents:** Fixed oil, resin, starch, sugar, proteids, etc.

**Dose:** 30 Gm. (1 ounce).

### **Preparations:**

None.

## **SINAPIS NIGRA**

1, German brown mustard. 2, English brown mustard.  
3, Bari brown mustard. 4, Trieste brown mustard. 5, California brown mustard. 6, Levant mustard.

## **SINAPIS NIGRA (Sinap. Nig.) U. S. P.**

**English name:** Black Mustard.

**Synonyms:** Brown Mustard.

**Botanical origin:** *Brassica nigra* (Linné) Koch.  
(Fam. *Cruciferæ*.)

**Part used:** Ripe seeds.

**Impurities:** Not more than 5 per cent. of other seeds  
or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Europe and Asia; naturalized in North America.

### **Description:**

Black Mustard occurs as entire seeds. It is an exalbuminous seed. The outline varies from globular to subglobular. Black mustard has a maximum diameter of 2.5 mm. The color varies from gray to yellow to reddish brown. The surface is shiny and finely reticulate when magnified with a simple lens. The base of the seed is constricted to a small point and is gray in color. The embryo is greenish yellow. The odor is aromatic when the seed is moistened. The taste is very strongly pungent.

**Constituents:** Gum, fixed oil, glucoside (sinigrin), myrosin, mucilage, proteids, etc.

**Dose (Emetic):** 10 Gm. (2½ drachms).

### **Preparations:**

Oleum Sinapis Volatile; Dose, 0.008 mil ( $\frac{1}{8}$  min.).

## **SINAPIS ALBA**

1. English yellow mustard. 2. Dutch yellow mustard. 3.  
German yellow mustard. 4. California yellow mustard.

## **SINAPIS ALBA (Sinap. Alb.) U. S. P.**

**English name:** White Mustard.

**Synonyms:** Yellow Mustard.

**Botanical origin:** *Sinapis alba* Linné. (Fam. *Cruciferae*.)

**Part used:** Ripe seeds.

**Impurities:** Not more than 5 per cent. of other seeds or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 9 per cent.

**Habitat:** Europe and Asia; naturalized in North America.

### **Description:**

White Mustard occurs as entire seeds. It is an exalbuminous seed. The outline varies from globular to subglobular. White mustard has a maximum diameter of 3 mm. The color varies from light to dark yellow. One of the curved surfaces has a ridge and two grooves parallel to its length; the opposite curved edge has no groove or ridge. The embryo is greenish yellow. The odor is aromatic when the seed is moistened. The taste is very strongly pungent.

**Constituents:** Gum, fixed oil, glucoside (sinalbin), enzyme (myrosin), mucilage, acids, etc.

**Dose (Emetic):** 10 Gm. ( $2\frac{1}{2}$  drachms).

### **Preparations:**

None.

## **GUARANA**

1, Part of a larger cylinder of guarana. 2, Crack in the surface. 3, Broken end of a cylinder showing white part of seeds.

## GUARANA U. S. P.

**English name:** Guarana.

**Synonyms:** Guarana Paste.

**Botanical origin:** *Paullinia Cupana* Kunth. (Fam. *Sapindaceæ*.)

**Part used:** Seeds, crushed.

**Impurities:** None given.

**Assay:** Not less than 4 per cent. of caffeine.

**Ash:** None given.

**Habitat:** Brazil and Venezuela.

### Description:

Guarana occurs as crushed seeds molded into cakes or cylindrical pieces. Guarana is fruit. The outline of the cylindrical pieces is oblong and usually widest at the center. These pieces measure 20 dm. or less in length and 4.8 cm. or less in diameter. The color varies from reddish brown to black. The surface is smooth or rough; the roughness is caused by slightly projecting portions of seed. The fractured surface is uneven and chocolate brown; occasionally it shows entire three-angled seeds or small seed cavities. The odor is not distinct. The taste is slightly bitter and astringent.

**Constituents:** Caffeine, tannin, gum, starch, fixed oil, volatile oil, saponin, etc.

**Dose:** 2 Gm. (30 grains).

### Preparations:

Elixir Guaranae N. F.; Dose, 4 mils (1 fl. dr.).

Fluidextractum Guaranae; Dose, 2 mils (30 min.).

## **KOLA**

1, Nearly circular cotyledon. 2, Space between the cotyledons. 3, 4, African Kola nuts.

## **KOLA (Kola) N. F.**

**English name:** Kola.

**Synonyms:** Cola, Kola-nut.

**Botanical origin:** Several species of *Cola* Schott and Endlicher. (Fam. *Sterculiaceæ*.)

**Part used:** Dried cotyledons.

**Impurities:** None given officially.

**Assay:** Not less than 1.5 per cent. of caffeine.

**Ash:** Not more than 3 per cent.

**Habitat:** Africa and West Indies.

### **Description:**

*Kola* occurs as the separated or united cotyledons. The *base* is usually rounded and smaller than the *apex*. The *margin* is entire. The *apex* is rounded. The *outline* varies from rotund to oval to irregular when the cotyledons are united. The united cotyledons measure 4 cm. or less in length, 3.5 cm. or less in width, and 22 mm. or less in thickness. The *color* varies from yellowish to reddish brown. The *surface* is dull and rough or smooth, and there is a space where the cotyledons have separated. At the base of the separated cotyledons there is an embryo. The *odor* is not distinct. The *taste* is slightly astringent.

**Constituents:** Alkaloids (caffeine, theobromine), sugar, starch, tannin, coloring matter, ferment, etc.

**Dose:** 4 Gm. (1 drachm).

### **Preparations:**

Fluidextractum Kolæ; Dose, 4 mils (1 fl. dr.).

## **MACIS**

**1.** Banda mace. **2.** Siam mace. **3.** West India mace.  
**4.** Broad bands of Banda mace.

## **MACIS N. F.**

**English name:** Mace.

**Synonyms:** Flowers of Mace.

**Botanical origin:** *Myristica fragrans*, Houttuyn.  
(Fam. *Myristicaceæ*.)

**Part used:** Arillode of seed.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 3 per cent., which is almost completely soluble in hydrochloric acid.

**Habitat:** Molucca Islands; cultivated extensively in tropical countries.

### **Description:**

Mace occurs as entire and broken compressed pieces of the arillode. The base is blunt or slightly notched, and it has a large circular scar. The apex is irregular. The outline is variable. The arillode measures 40 mm. or less in length and 30 mm. or less in width. The color varies from yellow to yellowish red. The surface is smooth, and it is usually solid near the base, but divided above into narrow bands which overlap at the apex. The arillode is brittle. The odor is aromatic. The taste is pungent and oily.

**Constituents:** Fixed and volatile oils, resin, sugar, proteins, mucilage, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Oleum *Myristicæ*; Dose, 0.2 mil (3 min.).

Cinnamon, 50 lbs. Square wooden case covered with matting and tied with strips of bamboo. Case contains about 24 bundles, each with three bands.

Cassia Buds, 50 lbs. Outer burlap, box covered with paper and an inner burlap covering.

Cassia Cinnamon, 50 lbs. 24 oblong bundles. 8 bamboo bands.

China Chips, 50 lbs. In matting and tied with thick bamboo.

## CHAPTER XV

### ALGÆ AND FUNGI

#### ALGÆ

THERE are two official algæ: fucus, a brown alga; and chondrus, a red alga. The plant body is called a *thallus*. It is not divided into root, stem, and leaves.

Fucus is brownish green when first collected, but it changes to black upon drying. The air bladders (vesicles), occurring in pairs, are the most characteristic portions of the thallus.

Chondrus is deep red when recently gathered; but before it is supplied to commerce it is bleached by sea water and sunlight.

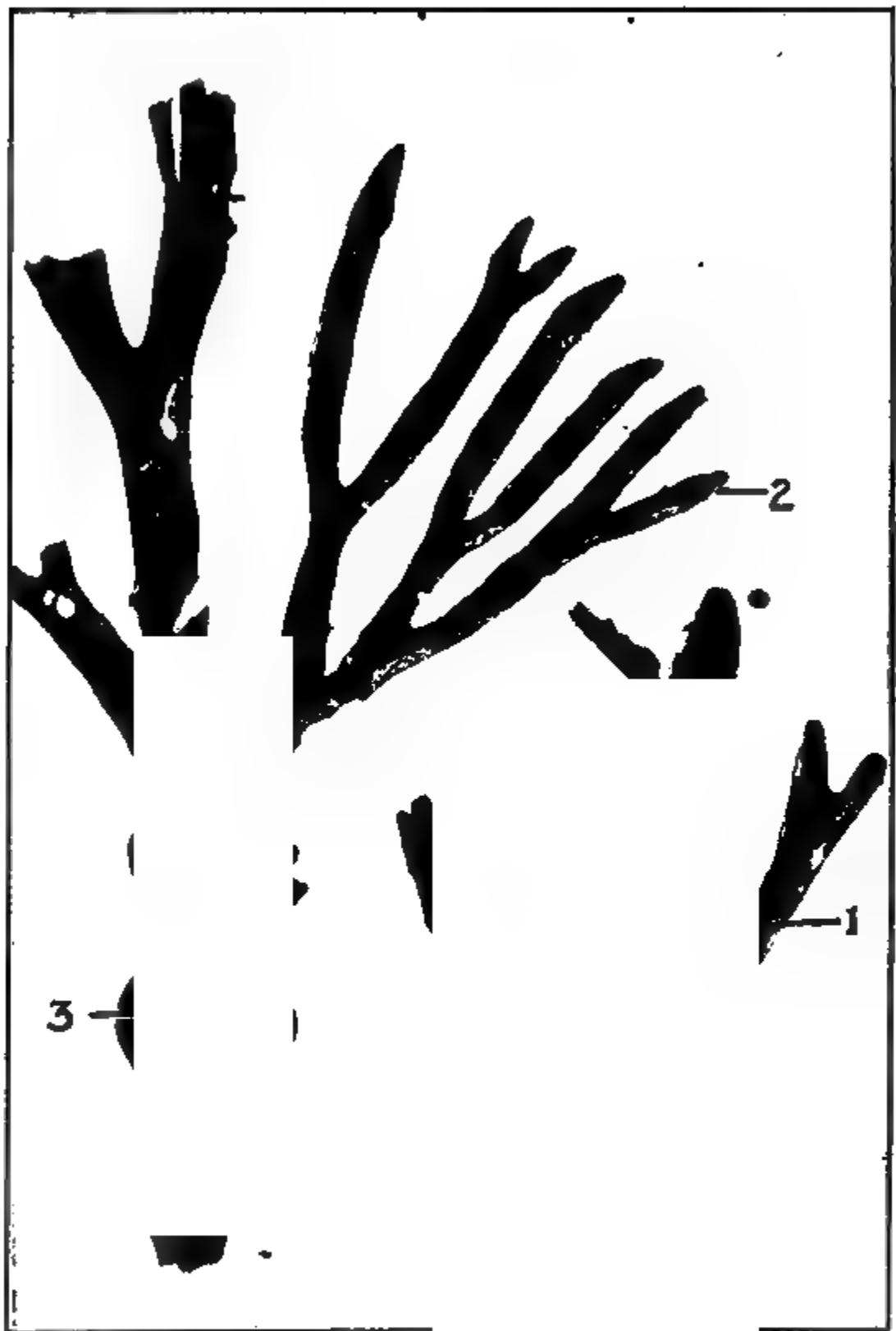
There are two species of red algæ official under chondrus; they differ greatly, and the differences are described in the descriptions of the drugs.

#### FUNGI

The three official fungi are yeast, ergot and agaric. The fungi differ from other groups of plants because they contain no chlorophyl; therefore, they cannot manufacture their own foods. Because they obtain their food from decaying organic matter, they are called saprophytes. Yeast is a unicellular (one-celled) fungus, and its structure can be studied only under the microscope.

Ergot is the rusting stage (sclerotium) of *Claviceps purpurea*. Under natural conditions it develops into a plant which would produce spores.

Agaric is a large fungus common on the European larch tree. After the fungus is collected, it is peeled and dried before it is used as a medicine. The commercial drug, therefore, no longer greatly resembles a fungus.



## FUCUS

1. Dichotomously branched thallus. 2. Branches of variable length. 3. Air vesicles occurring in pairs.

## FUCUS (Fuc.) N. F.

**English name:** Fucus.

**Synonyms:** Bladderwrack, Bladder Fucus.

**Botanical origin:** *Fucus vesiculosus* Linné. (Fam. *Fucaceæ*.)

**Part used:** Dried thallus.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 20 per cent.

**Habitat:** Shores of the North Pacific and North Atlantic Oceans.

### Description:

*Fucus* occurs as entire and as broken pieces of the plant (thallus). These pieces measure up to 4 dm. in length and up to 2 cm. in width. The thallus is dichotomously branched. The base of the thallus is cylindrical and the branches are mostly flattened. Each branch separates into two branches or is simple. The texture is cartilaginous. The color varies from brown to black. The surface has air vesicles usually occurring in pairs, a prominent midrib, and frequently white deposits of saline matter. Frequently the tips of the branches are enlarged because of great numbers of rounded, projecting, reproductive tissues. The odor is slight. The taste is saline and mucilaginous.

**Constituents:** Volatile oil, mucilage, cellulose, mannit, iodine, etc.

**Dose:** 0.65 Gm. (10 grains).

### Preparations:

Fluidextractum Fuci; Dose, 0.65 mil (10 min.).

## **CHONDRUS (CRISPUS)**

1. Plant with dichotomously branched ends. 2. Numerous plants attached to the small stone. 3. Stem-like parts of the thallus.

## **CHONDRUS (Chond.) U. S. P.**

### **(1) Chondrus Crispus**

**English name:** Chondrus.

**Synonyms:** Irish Moss, Carrageen.

**Botanical origin:** *Chondrus crispus* (Linné) Stackhouse. (Fam. *Gigartinaceæ*.)

**Part used:** Dried plant.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Shores of Atlantic Ocean.

#### **Description:**

*Chondrus crispus* occurs as entire or broken pieces of the plant (thallus). These pieces measure up to 12 cm. in length. The plant is dichotomously branching in pairs. The base of the plant is cylindrical and the branches are flat. Each branch separates into two branches. Frequently a fragment of rock occurs in the drug with several attached bases. The texture is cartilaginous. The color varies from yellowish white to red. The surface is smooth, frequently with small shells of crustacea. The plant is pliable. The outline is irregular. There is no microscopic difference in the tissues of the thallus. The odor is slight. The taste is salty and mucilaginous.

**Constituents:** Mucilage, pectin, proteids, etc.

**Dose:** None given.

#### **Preparations:**

Gelatinum Chondri N. F.  
Mucilago Chondri N. F.

## **CHONDRUS (GIGARTINA MAMILLOSA)**

1 Broad thallus with short dichotomously branched tips.  
2 Papillate sporangia. 3. Broken fragments of the plant.

## **CHONDRUS (Chond.) U. S. P.**

### **(2) Gigartina Mamillosa**

**English name:** Chondrus.

**Synonyms:** Irish Moss, Carrageen.

**Botanical origin:** *Gigartina mamillosa* (Goodenough et Woodward) J. Agardh. (Fam. *Gigartinaceæ*.)

**Part used:** Dried plant.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None given.

**Habitat:** Shores of Atlantic Ocean.

#### **Description:**

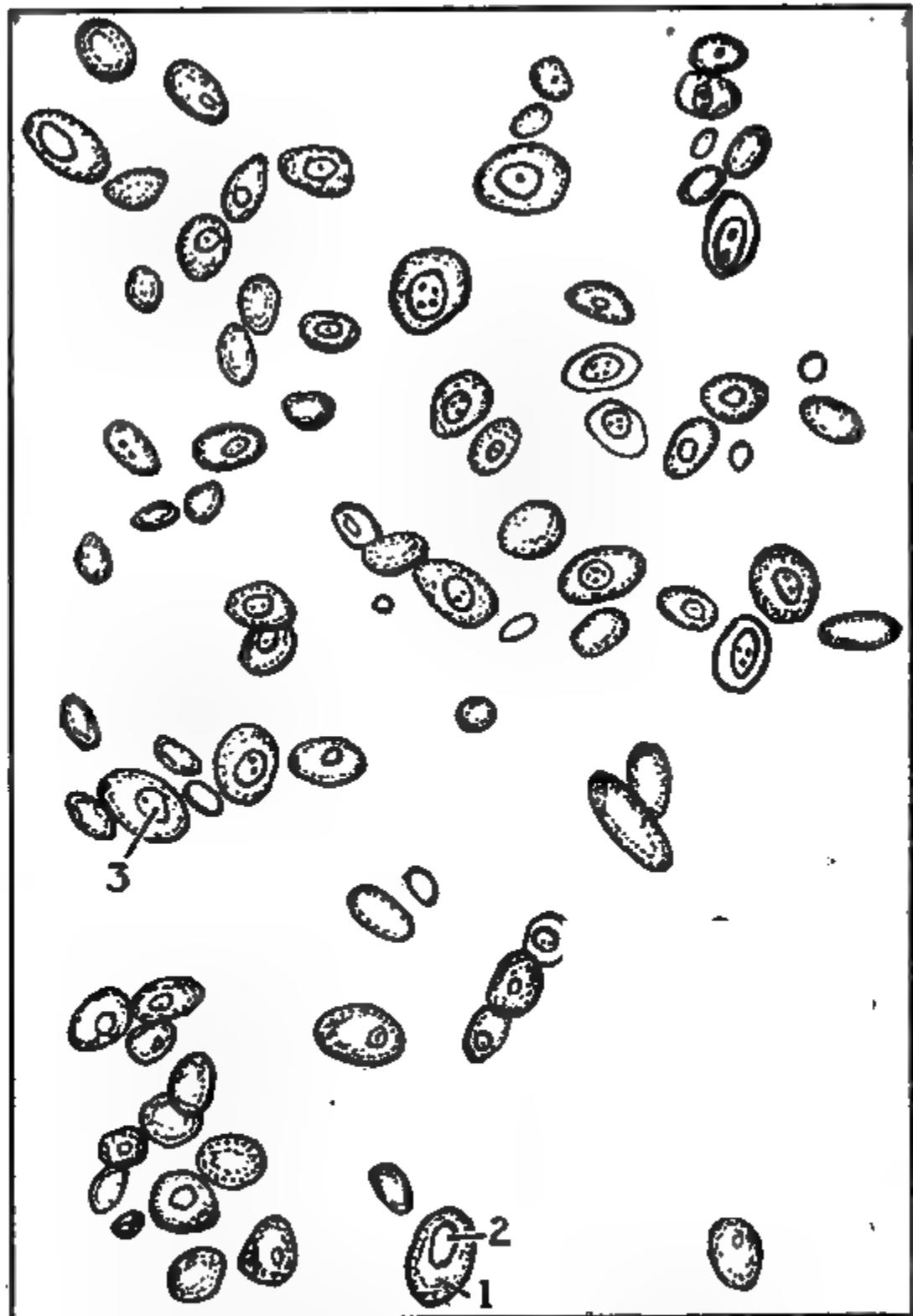
*Gigartina mamillosa* occurs as entire or broken pieces of the plant (thallus). These pieces measure up to 10 cm. in length. The plant is dichotomously branched. The base of the plant is cylindrical, and the branches are flat. Each branch separates into two branches. The texture is cartilaginous. The color varies from yellowish white to red. The surface has numerous slender papillate sporangia (reproductive bodies) scattered over the surface and an occasional shell. The outline is irregular. There is no microscopic difference in the tissues of the thallus. The odor is slight. The taste is salty and mucilaginous.

**Constituents:** Mucilage, pectin, proteids, etc.

**Dose:** None given.

#### **Preparations:**

Gelatinum Chondri N. F.  
Mucilago Chondri N. F.



### CEREVISIÆ FERMENTUM COMPRESSUM

1, Granular protoplasm. 2, Vacuole. 3, Globules of fat.

**CEREVISIÆ FERMENTUM COMPRESSUM**  
**(Cerev. Ferm. Compr.) N. F.**

**English name:** Compressed Yeast.

**Synonyms:** None.

**Botanical origin:** *Saccharomyces cerevisiae* Meyen, or other species of *Saccharomyces*. (Fam. *Saccharomycetaceæ*.)

**Part used:** Moist, living cells, combined with a starchy or absorbent base.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** None given.

**Habitat:** In sugary solutions.

**Description:**

Yeast occurs in compressed masses or cakes. It is a *fungus*. The cakes are variable in size. The texture is moist and starchy. The color is yellowish white. The surface is granular, the odor aromatic and the taste bitter. Under the microscope compressed yeast is seen to be composed of yeast and starch. The starch is readily recognized by the blue color developed when Lugol's solution is added. Yeast is oval or spherical. The wall is thin. The vacuoles have small globules of fat, and the protoplasm is granular.

**Dose:** None given. (Used for making fermented milk.)

**Preparations:**

None.

Cassia Fistula, 110 lbs. Bamboo basket and an outer covering of burlap. The only drug that is packed in this way.

## **PERSIO N. F.**

**English name:** Cudbear.

**Synonyms:** Red Indigo.

**Botanical origin:** Species of *Roccella* De Candolle, *Lecanora* Acharius and other lichens.

**Part used:** Purplish-red powder.

**Impurities:** None given.

**Assay:** None given.

**Ash:** Not more than 35 per cent., consisting mainly of sodium chloride.

**Habitat:** Sweden, East Indies, Holland and California.

### **Description:**

Cudbear occurs as a fine or coarse powder of a purplish red color. Its botanical origin can be determined only when viewed under the compound microscope.

**Constituents:** Not investigated.

**Dose:** Not used medicinally. (Coloring agent.)

### **Preparations:**

Tinctura Persionis.  
Tinctura Persionis Composita

## **AGARICUS**

1, White inner tissues. 2, Outer worthless part of the fungus.

## **AGARICUS (Agaric.) N. F.**

**English name:** Agaric.

**Synonyms:** White Agaric, Larch Agaric.

**Botanical origin:** *Polyporus officinale* Fries. (Fam. *Polyporaceæ*.)

**Part used:** Dried fruit body.

**Impurities:** Not more than 10 per cent. of foreign matter.

**Assay:** Yields to boiling alcohol not less than 50 per cent. resinous extract.

**Ash:** Not more than 2 per cent. of white ash rich in phosphates.

**Habitat:** Europe and Asia.

### **Description:**

Agaric occurs as entire or broken pieces of the peeled fungus. Agaric is a fungus. The outline of the pieces is irregular. Agaric measures 35 cm. or less in height, 2.5 cm. or less in width, and 12 cm. or less in thickness. The color varies from grayish yellow to light brown. The surface is rough and fibrous-appearing, but soft to the touch. The fracture is tough. The broken surface is similar to the outer surface. The odor is not distinct. The taste is sweet, acrid and bitter.

**Constituents:** Agaric acid, resin, etc.

**Dose:** 0.6 Gm. (10 grains).

### **Preparations:**

None.



### ERGOTA

1, 2, 3, Large and small ergots. 4, Longitudinal section of grain. 5, 6, Cross-sections.

## **ERGOTA U. S. P.**

**English name:** Ergot.

**Synonyms:** Rye Ergot, Smut of Rye, Spurred Rye, Secale Cornutum P. I.

**Botanical origin:** *Claviceps purpurea*. (Fam. Hypocreaceæ.)

**Part used:** Dried sclerotium.

**Impurities:** Not more than 5 per cent. of seeds, fruits or other foreign matter.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Russia, Spain, Germany and France.

### **Description:**

Ergot occurs as entire, rarely as broken, curved, or straight pieces. Ergot is the sclerotium of *Claviceps purpurea*. The outline is oblong-cylindrical and tapering at either end. Ergot measures 4 cm. or less in length and 7 mm. or less in diameter. The surface is longitudinally furrowed and fissured, and transversely fissured. The color varies from purple to purplish black. The fracture is brittle. The fractured surface is indistinctly triangular and is deeply indented on three sides. The outer layer of the sections is purplish black, the inner layer white or purplish white. The odor is distinct. The taste is oily.

**Constituents:** Alkaloids (ergotine, cornutine, ergotoxine, ecboline, tyramine, etc.), acids (ergotinic, sclerotic, etc.), lucin, mannit, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Extractum Ergotæ; Dose, 0.25 Gm. (4 grains).

Extractum Ergotæ Aquosum N. F.; Dose, 0.2 Gm. (3 grains).

Fluidextractum Ergotæ; Dose, 2 mils (30 min.).

Tinctura Ergotæ Ammoniata N. F.; Dose, 4 mils (1 fl. dr.).

Cloves, 125 lbs. Mats with a coarse rope tied three times around the short diameter of the bale and passed around the two sides of the long diameter. Capsicum comes in similar packages.

## CHAPTER XVI

# SPORES, NON-GLANDULAR AND GLANDULAR HAIRS, AND EXCRESENCES

### SPORES

*Lycopodium* is the only official spore. These spores are microscopic. These spores in nature continue the life of the species by growing under suitable conditions into a lycopodium plant. They are used in a mechanical way as a dusting powder and not as a remedial agent.

### NON-GLANDULAR HAIRS

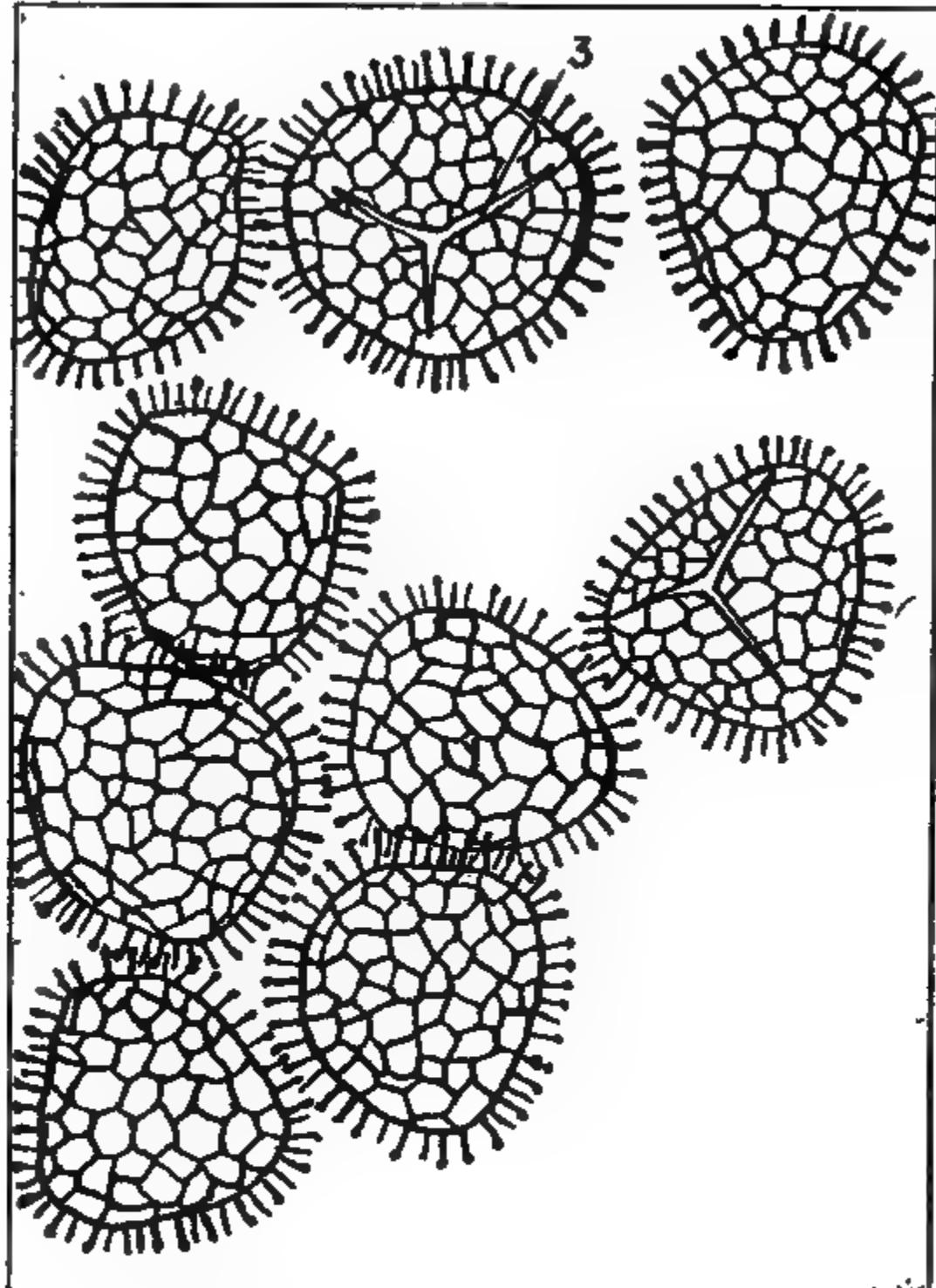
*Cotton* is the official non-glandular hair. The hairs are separated from cotton seed produced by the familiar cotton plant of the south. As cotton is used in medicine as an absorbent, it must be free of fat and aseptic. The hairs are very long and thread-like, and their structure is microscopic.

### GLANDULAR HAIRS

*Lupulin*, the glandular hair separated from the scales of hops, secretes and contains the oleoresin or active constituent of hops. Two views of lupulin, which has a microscopic structure, are shown.

### EXCRESENCES

*Nutgall* is an excrescence formed as the result of an insect (*Cynips tinctoria*) stinging and depositing its eggs in the young leaf of European oak (*Quercus infectoria*). A gall or excrescence is developed instead of a leaf. There are many different types of galls, but they are all different from nutgall.



### LYCOPODIUM

1. Hair-like projection 2. Reticulate surface. 3. Characteristic marking of the spore.

## **LYCOPodium (Lycopod.) U. S. P.**

**English name:** Lycopodium.

**Synonyms:** Club Moss, Running Moss, Snake Moss.

**Botanical origin:** *Lycopodium clavatum* Linné. (Fam. *Lycopodiaceæ*.)

**Part used:** Spores.

**Impurities:** Not more than 2 per cent.

**Assay:** None given.

**Ash:** Not more than 3 per cent.

**Habitat:** Europe and Asia.

### **Description:**

*Lycopodium* occurs as a powder consisting of microscopic entire spores. The powder is light yellow. It floats on water; when thrown into the air and ignited it burns with a flash. The only scientific means of identifying lycopodium is under the compound microscope. The spores, when magnified under the high power of the microscope, have one convex surface and three plane surfaces. The outer is reticulate and at the point of union of the wall there is a hair-like projection. These show best when the margin is in focus. The line of union of the plane surfaces frequently appears as a cross or triangle. The odor is not distinct; taste is wanting.

**Constituents:** Fixed oil, sugar, etc.

**Dose:** None. Not used internally.

### **Preparations:**

None.

**GOSSYPIUM PURIFICATUM**

1, Mass of cotton. 2, Separated fibers.

**GOSSYPIUM PURIFICATUM**  
**(Gossyp. Purif.) U. S. P.**

**English name:** Purified Cotton.

**Synonyms:** Absorbent Cotton.

**Botanical origin:** *Gossypium herbaceum* Linné. (Fam. *Malvaceæ*.)

**Part used:** Hairs of seed freed from adhering impurities and linters and deprived of fatty matters.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 0.2 per cent.

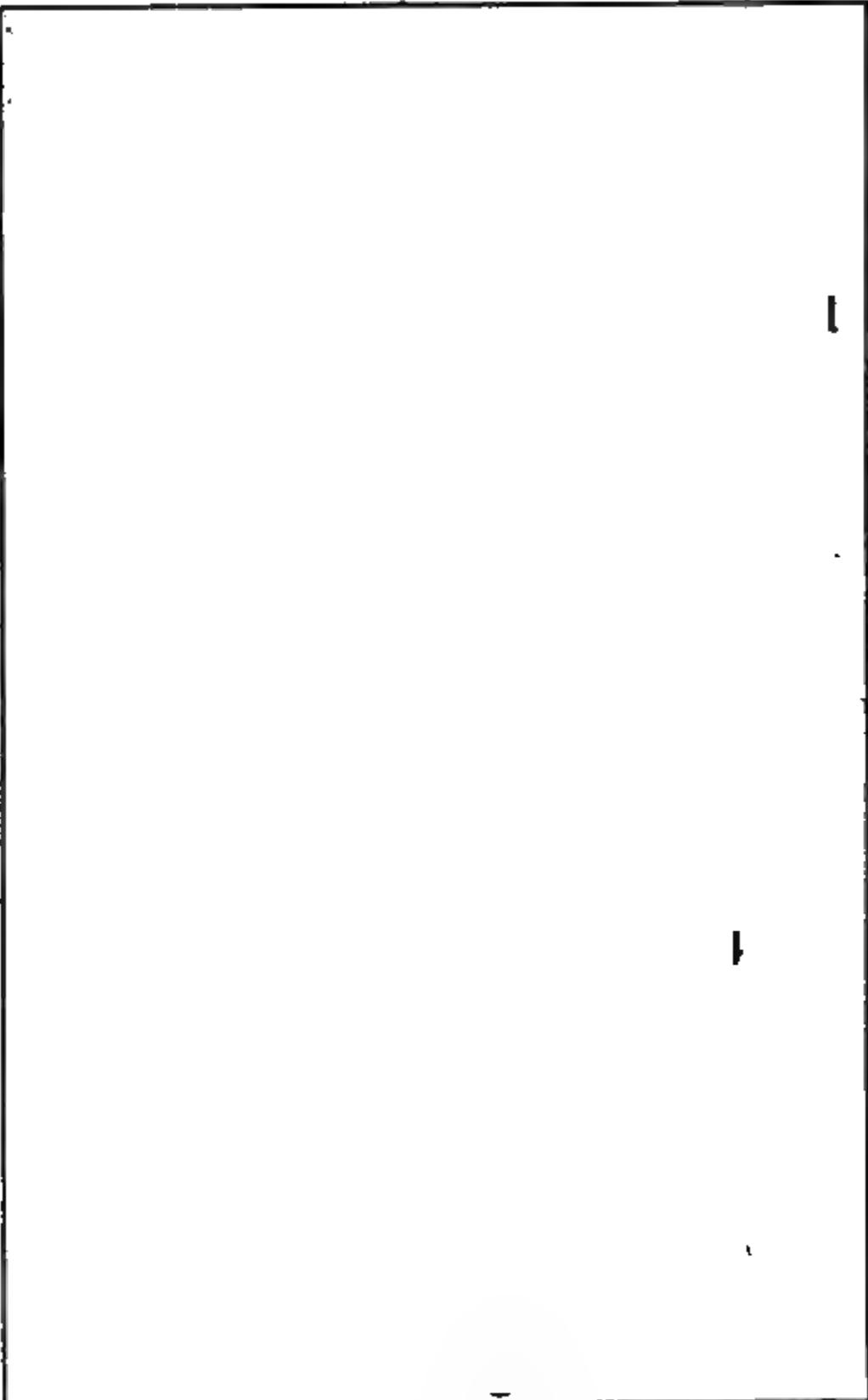
**Habitat:** Asia, Africa, China; cultivated extensively.

**Description:**

Purified cotton occurs as tangled masses of entire or broken hairs. Cotton is a unicellular hair. The color is white and the texture is soft and fibrous. When seen under the high power of the microscope cotton is either flat or twisted. The edges are thickened and the central part is structureless. There is no odor or taste to purified cotton.

**Preparations:**

*Gossypium Stypticum N. F.*



## **LUPULINUM**

1. Surface view of glandular hair. 2. Oleoresin mass. 3.  
Surface without cellular structure. 4. Reticulate surface.

## **LUPULINUM (Lupul.) N. F.**

**English name:** Lupulin.

**Synonyms:** None.

**Botanical origin:** *Humulus Lupulus* Linné. (Fam. *Moraceæ*.)

**Part used:** Glandular trichomes from the strobiles.

**Impurities:** None given officially.

**Assay:** Not less than 60 per cent. soluble in ether.

**Ash:** Not more than 16 per cent.

**Habitat:** Asia and Europe; cultivated in countries having a temperate climate.

### **Description:**

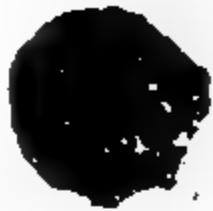
Lupulin occurs as a sticky powder, consisting of entire multicellular, glandular hairs with angled walls. The color varies from lemon yellow to yellowish brown. It floats on water. Under the high power of the compound microscope the spores, when viewed from the top, are nearly circular and the outer layer of cells is in sharp focus, while the remaining curved part is not so distinct. When the spores are viewed the tube of the microscope must be gradually raised. If looked at from the side the spores are seen to be mushroom-shaped. The walls of the upper part are distinct, those of the lower part indistinct. Frequently the spores contain large globules of oil. The odor is aromatic. The taste is pungent and bitter.

**Constituents:** Resin, volatile oil, tannin, choline, asparagin, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Fluidextractum Lupulini; Dose, 0.5 mil (8 min.).  
Oleoresina Lupulini; Dose, 0.2 Gm. (3 grains).



3



1

4

### GALLA

1. Large perfect gall. 2. Tuberculated surface. 3. Central cavity of the gall. 4. Cylindrical opening formed by the escaping insect.

## **GALLA (Gall.) U. S. P.**

**English name:** Nutgall.

**Synonyms:** Aleppo Galls, Smyrna Galls.

**Botanical origin:** *Quercus infectoria* Olivier and other allied species of *Quercus*. (Fam. *Fagaceæ*.)

**Part used:** Excrescences on the young twigs.

**Impurities:** None given in U. S. P.

**Assay:** Not more than 5 per cent. of galls floats in water.

**Ash:** None given.

**Habitat:** Mediterranean Basin, Asia Minor, Persia.

### **Description:**

Nutgall occurs in the entire condition. It is a gall. The base of the gall is constricted and is frequently attached to a short-leaf petiole. The margin is irregular. The apex is rounded. The outline is globular. They measure 28 mm. or less in length and 25 mm. or less in diameter. The color varies from bluish gray to yellowish brown. The surface is tuberculated. The bored galls have a circular opening. Sawed galls have sunken spaces, a dark, circular, central cavity and a cylindrical canal extending to the surface; the latter is formed by the escaping insect. The color of the inner surface varies from gray to brown. The odor is not distinct. The taste is very strongly astringent.

**Constituents:** Tannic, gallic and ellagic acids, sugar, resin, starch, albuminous matter, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Tinctura Gallæ N. F.; Dose, 4 mils (1 fl. dr.).  
Unguentum Gallæ.

**Aloes.** Barrel of Gourd Aloes. Keg of Socotrine Aloes. Two cases of Monkey-skin Aloes, one case with burimp and one case with matting. One monkey-skin suspended (left) to show method of transportation. Gourds (freed from seeds) filled with aloes and a piece of cloth stuck over the opening.

## CHAPTER XVII

### **STARCH, GUM, SUGAR, AND MUCILAGE**

#### **STARCH**

**CORN STARCH** is the official starch. It is separated from corn by a special process. Corn starch has a characteristic microscopic structure. The purity of corn starch should always be determined because it is frequently adulterated with potato and other starches. Talcum is also frequently added to increase the weight.

#### **SUGAR**

*Manna* is a solid sugar obtained from the European ash tree. It has a very pleasing taste at first, but its final taste is rather disagreeable. The commercial product varies in price according to the size and cleanliness of the pieces. Refer to the different figures.

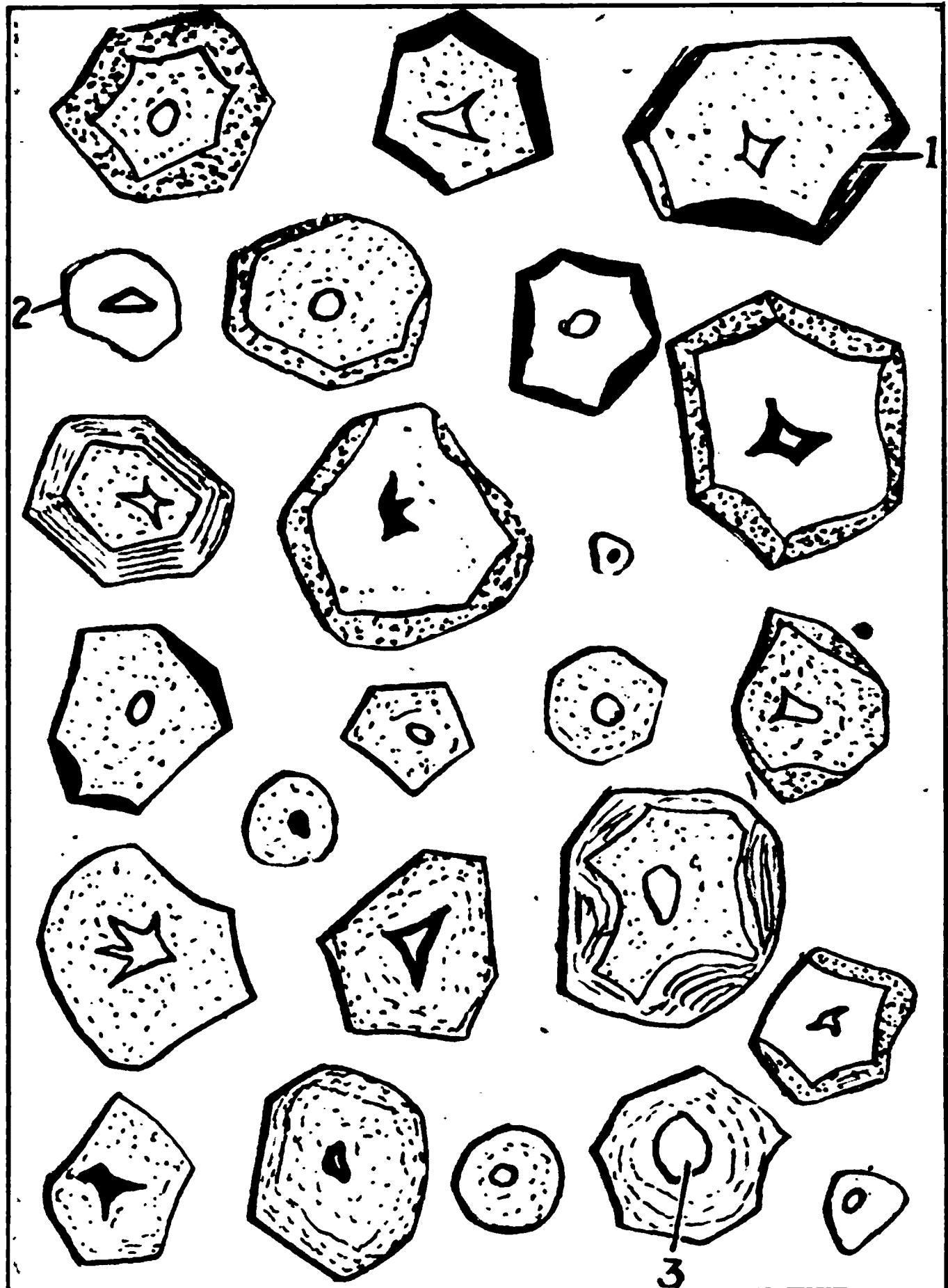
#### **GUMS**

*Tragacanth* and *acacia* are the official gums. *Tragacanth* is ribbon-like and has characteristic transverse ridges which are formed during the period of decreased rate of flow. The pieces are always dull and opaque.

*Acacia* occurs as straight, curved or rounded tears, which are frequently hollow in the center. The surface is shiny and transparent when recently collected, but when thoroughly dry, the surface is dull, full of cracks, and opaque.

#### **MUCILAGE**

The only official dried mucilage is *agar-agar*, prepared from Japanese sea-weed. It is used extensively in the preparation of culture media for growing bacteria. *Agar* is usually shredded, and frequently packed in bundles.



## AMYLOM

1, Starch grain with angled outline. 2, Grain with rounded outline. 3, Round hilum or space.

## **AMYLUM (Amyl.) U. S. P.**

**English name:** Starch.

**Synonyms:** Corn Starch.

**Botanical origin:** *Zea Mays* Linné. (Fam. *Gramineæ*.)

**Part used:** Starch separated from the grain.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 5 per cent. of white ash.

**Habitat:** South America; cultivated.

### **Description:**

Corn Starch occurs as white powder consisting of entire starch grains. Corn starch is a *starch*. The powder is white and it is fine or in slightly angled masses. As seen under the high power of the microscope, the grains are rounded, angled, or rounded and angled in outline. The hilum is central, rounded or cleft. When Lugol's solution is added to the powder on the slide the grains are colored blue. The odor of starch is not distinct. The taste is starchy and slightly sweet.

**Constituents:** Granulose, cellulose, etc.

**Dose:** None given.

### **Preparations:**

Glyceritum Amyli. (Excipient.)

## **MANNA**

1, Three pieces of manna of variable size. 2, Small white tear. 3, Rounded tear. 4, Manna sorts consisting of agglutinated tears and impurities.

## **MANNA U. S. P.**

**English name:** Manna.

**Synonyms:** None.

**Botanical origin:** *Fraxinus Ornus* Linné. (Fam. *Oleaceæ*.)

**Part used:** Dried saccharine exudation.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 40 per cent. of the yellowish white fragments.

**Ash:** None given.

**Habitat:** Mediterranean Basin.

**Description:**

Manna occurs as entire and broken tears or sorts. Manna is a sugar. The outline of the larger pieces is oblong, and either flat or cylindrical. The pieces measure 25 cm. or less in length and 5.5 cm. or less in width. The color of large flake manna varies from white to yellowish white; of small flake manna, yellowish white; of manna sorts, yellowish brown. The surface is rough, flat or ridged. The fracture is very weak and brittle. The fractured surface is frequently three-sided. The odor is slight. The taste is sweet and slightly bitter.

**Constituents:** Mannit, glucose, mucilage, resin, etc.

**Dose:** 15 Gm. (4 drachms).

**Preparations:**

Infusum Sennæ Compositum; Dose, 120 mils (4 fl. ozs.).  
Syrupus Mannæ N. F.; Dose, 8 mils (2 fl. drs.).

## **TRAGACANTHA**

1, Broad ribbon. 2, Transverse band. 3, Serrate edge  
of a band. 4, 5, Different types of ribbons.

## **TRAGACANTHA (Trag.) U. S. P.**

**English name:** Tragacanth.

**Synonyms:** Gum Tragacanth.

**Botanical origin:** *Astragalus gummifer* Labillardière or other Asiatic species of *Astragalus*. (Fam. *Leguminosæ*.)

**Part used:** Gummy exudation from the stems.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 3.5 per cent.

**Habitat:** Asia Minor, Persia and Syria.

### **Description:**

Tragacanth occurs as entire or broken, flattened pieces. Tragacanth is a gum. The outline is usually oblong and curved or straight. The pieces measure 12 cm. or less in length and 28 mm. or less in diameter. The surface has transverse bands. The color varies from white to yellowish white. The fracture is brittle. The texture is horny. The odor is not characteristic. The taste is mucilaginous.

**Constituents:** Soluble and insoluble gum and starch, pectin, etc.

**Dose:** None given.

### **Preparations:**

Glyceritum Tragacanthæ N. F.  
Mucilago Tragacanthæ.

## **ACACIA**

**1, 2, 3, 4.** Different types of acacia tears.

## **ACACIA (Acac.) U. S. P.**

**English name:** Acacia.

**Synonyms:** Gum Arabic, Gum Acacia, Gum Senegal.

**Botanical origin:** *Acacia Senegal* Willdenow and other African species of *Acacia*. (Fam. *Leguminosæ*.)

**Part used:** Dried gummy exudation.

**Impurities:** Not more than 1 per cent. of powdered acacia is insoluble in water.

**Assay:** When powdered, contains not more than 15 per cent. of moisture.

**Ash:** Not more than 4 per cent.

**Habitat:** Africa.

### **Description:**

Acacia occurs as entire and broken tears. Acacia is a gum. The outline varies from globular to oblong-cylindrical, and the pieces are straight and curved. The pieces measure 8 cm. or less in length and 5 cm. or less in width. The color varies from gray to pink and is opaque. The surface is smooth when the drug has been recently gathered, but fissured after it has been kept for some time. The fracture is brittle. The fractured surface is frequently glistening. The odor is not distinct. The taste is slightly sweet and mucilaginous.

**Constituents:** Arabin (arabic acid), pararobin, etc.

**Dose:** None given.

### **Preparations:**

Mucilago *Acaciæ*; Dose, 15 mils (4 fl. drs.).  
Syrupus *Acaciæ*. (Vehicle.)

## **AGAR**

**1. Mass of agar-agar strips.**

## **AGAR U. S. P.**

**English name:** Agar.

**Synonyms:** Agar-Agar, Japanese Isinglass, Vegetable Gelatin.

**Botanical origin:** *Gracilaria (Sphaerococcus) lichenoides* Greville and other marine algae growing along the eastern coast of China, particularly several species of *Gelidium* or *Gloiopeletis*. (Class *Rhodophyceæ*.)

**Part used:** Dried mucilaginous substance.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** Japan and China.

### **Description:**

Agar occurs as folded flat pieces arranged in bundles. The outline of the pieces is oblong. Agar is of variable length and width. The color varies from gray to grayish brown. The surface is shiny and wrinkled. The fracture is tough. The odor is not distinct. The taste is mucilaginous.

**Constituents:** Pectin, gelose, etc.

**Dose:** 10 Gm. ( $2\frac{1}{2}$  drachms).

### **Preparations:**

None.

**Small barrel of Guaiac (200 lbs.) in solid piece. Gum Myrrh, 200 lbs. Inner matting and outer burlap covering.**

## CHAPTER XVIII

# RESINS, GUM RESINS, BALSAMS, BALSAMIC RESINS AND OLEORESINS RESINS

THE three official resins are rosin, guaiac and mastic.

*Rosin* is the residue left after distilling oil of turpentine from terebenthina.

*Guaiac* is a resin obtained from the official guaiac wood.

*Mastiche* is the only resin occurring as tears. It is friable, but it becomes plastic when chewed.

### GUM RESINS

The official gum resins are *asafetida*, *gamboge* and *myrrh*. They all differ greatly in appearance; and in the case of *asafetida*, the odor is characteristically and disagreeably aromatic.

### BALSAMIC RESINS

*Benzoin* is the only balsamic resin. The title includes the Sumatra and Siam varieties. Sumatra benzoin consists of a matrix of a reddish brown color surrounding light colored tears, while Siam benzoin consists wholly of tears.

### OLEORESINS

The only solid oleoresin is *turpentine*, which is obtained by cutting the bark of several species of southern pine and collecting the excretion or oleoresin.

## **RESINA**

**1. Abraded white surface. 2. Concave surface.**

**590**

## **RESINA (Resin.) U. S. P.**

**English name:** Rosin.

**Synonyms:** Colophony, Georgia Pine Rosin, Yellow Pine Rosin.

**Botanical origin:** *Pinus palustris* Miller and other species of *Pinus*. (Fam. *Pinaceæ*.)

**Part used:** Residue left after distilling the volatile oil from the concrete oleoresin.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 0.05 per cent.

**Habitat:** Virginia, south to Florida and Texas.

### **Description:**

Resin occurs as irregular masses. Resin is a resin. The outline is irregular and angled, the size is variable, and the texture is vitreous. The color is yellowish brown; when the surface is abraded the color is white or yellowish white. The surface is translucent, powdery where abraded, and rough with numerous depressions. The fracture is conchoidal. The odor is slightly aromatic. The taste is pungent and terebinthinate.

**Constituents:** Abietinic acid or its anhydride, pinic and sylvic acids, etc.

### **Preparations:**

Ceratum Resinæ.

Ceratum Resinæ Compositum N. F.

Emplastrum Elasticum.

Emplastrum Resinæ.

## **GUAIACUM**

1, Round cake. 2, Piece of large cake.

## GUAIACUM (Guaiac.) U. S. P.

**English name:** Guaiac.

**Synonyms:** Guaiac Resin.

**Botanical origin:** *Guaiacum officinale* Linné or *Guaiacum sanctum* Linné. (Fam. *Zygophyllaceæ*.)

**Part used:** Resin of the wood.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 4 per cent.

**Habitat:** South America, West Indies.

### Description:

Guaiac occurs as angled fragments or as rounded masses. Guaiac is a resin. The outline of the fragments is angular, of the masses rounded. The pieces and fragments are variable in size. The texture is vitreous. The surface is dull, powdery and rough, and bears partially detached fragments of bark and wood. The fracture is hackly. Small fragments are yellowish green and shiny. The odor is not distinct. The taste is acrid.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Gargarisma Guaiaci Compositum N. F.

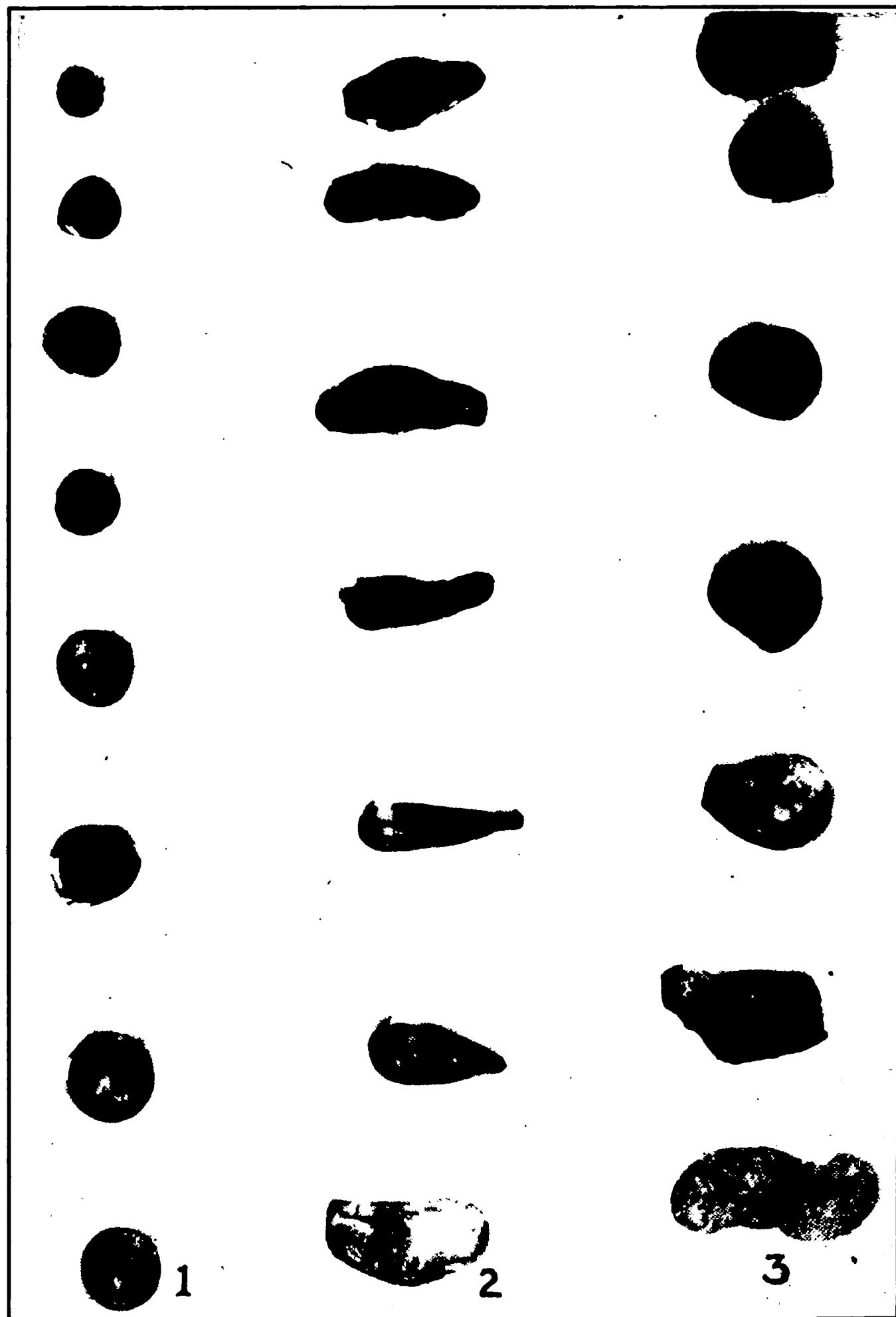
Glyceritum Guaiaci N. F.; Dose, 2 mils (30 min.).

Mistura Guaiaci N. F.; Dose, 15 mils (4 fl. drs.).

Tinctura Guaiaci; Dose, 4 mils (1 fl. dr.).

Tinctura Guaiaci Ammoniata; Dose, 2 mils (30 min.).

Tinctura Guaiaci Composita N. F.; Dose, 4 mils (1 fl. dr.).



## MASTICHE

1, Globular tears. 2, Oblong tears. 3, Irregular tears.

## **MASTICHE (Mastic.) N. F.**

**English name:** Mastic.

**Synonyms:** Mastix, Resin of Mastic.

**Botanical origin:** *Pistacia Lentiscus* Linné. (Fam. *Anacardiaceæ*.)

**Part used:** Concrete resinous exudation.

**Impurities:** None given officially.

**Assay:** Acid number is not less than 65.

**Ash:** None given.

**Habitat:** Mediterranean Basin, Island of Scio.

### **Description:**

Mastic occurs as entire or broken tears. Mastic is a resin. The outline varies from globular to oblong-cylindrical. Mastic tears have a maximum length of 2 cm. and a maximum width of 12 mm. The texture is vitreous. The color is light greenish yellow. The surface is transparent, smooth and shiny. The fracture is even. The odor is not distinct. The taste is slightly pungent. Mastic becomes plastic when it is chewed.

**Constituents:** Volatile oil, resins, bitter principle, etc.

**Dose:** 2 Gm. (30 grains).

### **Preparations:**

Pilulæ Aloes et Mastiches; Dose, 2 pills.

## **ASAFETIDA**

1, Fragment of wood imbedded in mass. 2, 3, Irregular mass.

## **ASAFŒTIDA (Asafœt.) U. S. P.**

**English name:** Asafetida.

**Synonyms:** Gum Asafetida.

**Botanical origin:** *Ferula Asafœtida* Linné, *Ferula fætida* Regel and some other species of *Ferula*. (Fam. *Umbelliferæ*.)

**Part used:** Gum resin obtained by incising the rhizomes and roots.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 60 per cent., or, if powdered, 50 per cent., of alcohol-soluble constituents.

**Ash:** Of gum-resin not more than 15 per cent.; of powder not over 30 per cent.

**Habitat:** Persia and Afghanistan.

### **Description:**

Asafetida occurs as plastic or solid masses, rarely as tears. It is a gum resin. The outline of the masses is irregular. The size of the pieces is variable. The texture is waxy when the drug is hard. The color of the mass is usually a mixture of yellow, white, brown and red. The surface is mottled and uneven. The fracture is conchoidal. The odor is strongly aromatic and persistent. The taste is pungent, like garlic.

**Constituents:** Volatile oil, resin, gum, etc.

**Dose:** 0.25 Gm. (4 grains).

### **Preparations:**

*Emulsum Asafœtidæ*; Dose, 15 mils (4 fl. drs.).

*Pilulæ Asafœtidæ*; Dose, 2 pills.

*Tinctura Asafœtidæ*; Dose, 1 mil (15 min.).

## **CAMBODIA**

**1.** Solid cylinder. **2.** Curved cylinder. **3.** Cross-section of hollow cylinder. **4.** Cross-section of solid cylinder.

## **CAMBOGIA (Cambog.) U. S. P.**

**English name:** Gamboge.

**Synonyms:** Pipe Gamboge.

**Botanical origin:** *Garcinia Hanburii* Hooker filius.  
(Fam. *Guttiferae*.)

**Part used:** Gum-resin.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 65 per cent. is soluble in alcohol.

**Ash:** Not more than 2 per cent.

**Habitat:** India, China and Siam.

### **Description:**

Gamboge occurs as cylindrical, straight and curved pieces. Gamboge is a gum-resin. The outline of the pieces is oblong-cylindrical. The maximum length of the pieces is 18 cm., maximum width 4 cm. The texture is waxy. The color is orange brown; when abraded, lemon yellow; when moistened, milky, yellowish white. The surface is finely wrinkled or longitudinally striated. The fracture is conchoidal. The fractured surface is hollow or solid. The odor is not distinct. The taste is acrid.

**Constituents:** Gum, resin, volatile oil, acids, etc.

**Dose:** 0.125 Gm. (2 grains).

### **Preparations:**

Pilulæ Catharticæ Compositæ; Dose, 2 pills.

## **MYRRHA**

1, Rough and fissured surface. 2, Piece of bark. 3,  
Masses of variable size.

## **MYRRHA (Myrrh.) U. S. P.**

**English name:** Myrrh.

**Synonyms:** Gum Myrrh.

**Botanical origin:** One or more species of *Commiphora*.  
(Fam. *Burseraceæ*.)

**Part used:** Gum-resin.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 35 per cent. is soluble in alcohol.

**Ash:** Not more than 8.5 per cent.

**Habitat:** Eastern Africa.

### **Description:**

Myrrh occurs as irregular masses of agglutinated tears. Myrrh is a gum-resin. The outline of the pieces is irregular. The pieces have a maximum length or width of 12 cm. and a thickness of 8 cm. The texture is waxy. The color varies from light yellow to dark brown. The surface is dull, powdery and rough because of numerous projecting tears. The fracture is conchoidal. The odor is aromatic. The taste is pungent, bitter and acrid.

**Constituents:** Volatile oil, resin, gum, bitter principle, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Pilulæ Rhei Compositæ; Dose, 2 pills.

Tinctura Aloes et Myrrhæ N. F.; Dose, 2 mils (30 min.).

Tinctura Myrrhæ; Dose, 1 mil (15 min.).

## **BALSAMUM PERUVIANUM**

**(Bals. Peruv.) U. S. P.**

**English name:** Balsam of Peru.

**Synonyms:** Peru Balsam.

**Botanical origin:** *Toluifera Pereiræ* (Royle) Baillon.  
(Fam. *Leguminosæ*.)

**Part used:** Balsam.

**Impurities:** None given in U. S. P.

**Assay:** Acid number not less than 56 nor more than 84. Saponification value for the cinnamein 235 to 238.

**Ash:** None stated in U. S. P.

**Description:**

Balsam of Peru occurs as a syrupy liquid; color reddish brown; odor agreeable and vanilla-like; taste bitter and acrid, with persistent after-taste; specific gravity 1.130 to 1.160 at 25° C.

**Constituents:** Cinnamein, benzoic and cinnamic acids, vanillin, styracin, resin, etc.

**Dose:** None given officially.

**Preparations:**

None.

## **BALSAMUM TOLUTANUM**

**(Bals. Tolu.) U. S. P.**

**English name:** Balsam of Tolu.

**Synonyms:** Tolu Balsam.

**Botanical origin:** *Toluifera Balsamum* Linné. (Fam. *Leguminosæ*.)

**Part used:** Entire balsam.

**Impurities:** None given in U. S. P.

**Assay:** Saponification value not less than 154 nor more than 220.

**Ash:** None given.

**Description:**

Balsam of Tolu occurs as a putty-like plastic solid; odor, vanilla-like; taste, mild and aromatic; becomes brittle when exposed to the air or when cooled sufficiently.

**Constituents:** Practically same as of balsam of Peru.

**Dose:** None given.

**Preparations:**

**Syrupus Tolutanus;** Dose, 15 mils (4 fl. drs.).  
**Tinctura Tolutana;** Dose, 2 mils (30 min.).

## STYRAX U. S. P.

**English name:** Storax.

**Synonyms:** Liquid Storax.

**Botanical origin:** *Liquidambar orientalis* Miller.  
(Fam. *Hamamelidaceæ*.)

**Part used:**

**Impurities:** None given in U. S. P.

**Assay:** Residue insoluble in hot alcohol not over 2.5 per cent.; acid value not less than 56 nor more than 85; saponification value not less than 170 nor more than 230.

**Ash:** Not more than 1 per cent.

**Description:**

Storax occurs as a semi-liquid, sticky, opaque mass, depositing on standing a heavy, dark brown stratum; color grayish; odor characteristic; taste acrid.

**Constituents:** Resins, volatile oil, cinnamic acid and its esters, vanillin, resins, etc.

**Dose:** 1 Gm. (15 grains).

**Preparations:**

Enters in Tinctura Benzoini Composita.

## **COPAIBA (Copaib.) U. S. P.**

**English name:** Copaiba.

**Synonyms:** Balsam of Copaiba; Copaiva.

**Botanical origin:** South American species of *Copaiba* (Fam. *Leguminosæ*.)

**Part used:** Oleoresin.

**Impurities:** None given in U. S. P.

**Assay:** Acid value not less than 28 nor more than 95; resin content not less than 36 per cent.

**Ash:** None given.

### **Description:**

*Copaiba occurs as a viscid liquid; color brownish-yellow, occasionally with a slightly greenish fluorescence; odor aromatic; taste bitter and acrid; specific gravity 0.940 to 0.995 at 25° C.*

**Constituents:** Volatile oil, resin, acids, etc.

**Dose:** 1 mil (15 min.).

### **Preparations:**

*Massa Copaiæ N. F.; Dose, 1 Gm. (15 grains).*

*Mistura Copaiæ N. F.; Dose, 8 mils (2 fl. drs.).*

*Mistura Copaiæ et Opii N. F.; Dose, 4 mils (1 fl. dr.).*

## **PIX LIQUIDA (Pix. Liq.) U. S. P.**

**English name:** Tar.

**Synonyms:** Pine Tar.

**Botanical origin:** *Pinus palustris* Miller, or other species of *Pinus*. (Fam. *Pinaceæ*.)

**Part used:**

**Impurities:** None stated in U. S. P.

**Assay:** None given.

**Ash:** None stated.

**Description:**

Tar occurs as a thick, syrupy liquid; color nearly black; odor aromatic; taste pungent and empyreumatic.

**Constituents:** Resin, turpentine, empyreumatic oils, creosote, etc.

**Dose:** 0.5 Gm. (8 grains).

**Preparations:**

Glyceritum Picis Liquidæ N. F.; Dose, 4 mils (1 fl. dr.).

Liquor Picis Alkalinus N. F. (Used externally.)

Syrupus Picis Liquidæ; Dose, 4 mils (1 fl. dr.).

Unguentum Picis Liquidæ. (Used externally.)

Vinum Picis N. F.; Dose, 8 mils (2 fl. drs.).

## **TEREBINTHINA LARICIS**

**(Terebinth. Laric.) N. F.**

**English name:** Venice Turpentine.

**Synonyms:** Larch Turpentine.

**Botanical origin:** *Larix Europaea* De Candolle. (Fam. *Pinaceæ*.)

**Part used:** Viscid oleoresin.

**Impurities:** None given officially.

**Assay:** Acid number not more than 80.

**Ash:** None given.

### **Description:**

Venice turpentine occurs as a thick semi-liquid, heavier than water; color yellowish green; odor aromatic; taste bitter and pungent.

**Constituents:** Volatile oil, resin, etc.

**Dose:** None given.

### **Preparations:**

Petroxolinum Terebinthinae Laricis N. F. (Used externally.)

## **TEREBINTHINA**

1, 2, Mass of turpentine. 3, Pine needle.

## **TEREBINTHINA (Terebinth.) N. F.**

**English name:** Turpentine.

**Synonyms:** Common Turpentine, Gum Thus.

**Botanical origin:** *Pinus palustris* Miller and from other species of *Pinus*. (Fam. *Pinaceæ*.)

**Part used:** Concrete oleoresin.

**Impurities:** Not more than 2 per cent. of mechanical impurities.

**Assay:** Soluble in alcohol, ether, chloroform, or glacial acetic acid.

**Ash:** None given.

**Habitat:** Virginia, south to Florida and Texas.

**Description:**

Turpentine occurs as irregular masses. The outline is irregular, the size is variable, and the texture is resinous. The color varies from yellowish white to yellow. The surface is opaque and uneven. The fracture is uneven. The odor is aromatic. The taste is pungent.

**Dose:** None stated officially.

**Preparations:**

None.

## **BENZOINUM**

1 Brown tear. 2, White tear. 3, Adhering piece of  
burlap.

## BENZOINUM (Benzoin.) U. S. P.

**English name:** Benzoin.

**Synonyms:** Gum Benzoin, Gum Benjamin.

**Botanical origin:** *Styrax Benzoin* Dryander and some other species of *Styrax* growing in the East Indies. (Fam. *Styracaceæ*.)

**Part used:** Balsamic resin.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 75 per cent. of Sumatra and 90 per cent. of Siam benzoin dissolves in alcohol.

**Ash:** Not more than 2.5 per cent. in Sumatra benzoin and not over 2 per cent. in Siam benzoin.

**Habitat:** East Indies.

### Description:

Benzoin occurs as large, square cakes, covered with burlap, or as separate tears and masses. The outline of the broken cakes and tears is irregular. The size is variable, the texture waxy. The color varies from white to yellow to reddish brown. In Sumatra benzoin the white tears are surrounded by a reddish brown mass. In Siam benzoin the tears are yellowish brown externally, yellowish white internally. The surface is rough. The fracture is uneven. The odor is aromatic. The taste is pungent and acrid.

**Constituents:** Benzoic acid, cinnamic acid, styracin, vanillin and resin.

**Dose:** 1 Gm. (15 grains).

### Preparations:

*Adeps Benzoinatus.*

*Tinctura Benzoini;* Dose, 1 mil (15 min.).

*Tinctura Benzoini Composita;* Dose, 2 mils (30 min.).

## CHAPTER XIX

# LATEX, DRIED JUICES, EXTRACTS AND CAMPHORS

### LATEX

THE three drugs consisting of dried latex are opium, lactucarium, and gutta-percha. All these differ greatly in appearance and in form.

*Opium* is obtained by cutting the poppy capsule and collecting, when dried, the milky juice. As the source of morphine, codeine, etc., opium is classed as one of the most important drugs of the Pharmacopœia.

*Lactucarium* is a dried milk juice occurring as small cakes of a brown or brownish black color.

*Gutta-percha* is the purified, coagulated, milky exudate of various trees.

### DRIED JUICES

The official dried juices include kino and three varieties of aloes.

*Kino* occurs as small irregular fragments.

The different varieties of *aloes* are quite distinct in appearance, though supposed to be similar in properties.

### EXTRACTS

*Gambir*, the only official extract, occurs as brownish black cubes or rectangular pieces of variable size. When broken, they are yellowish and powdery.

### CAMPHORS

*Camphor* occurs as cakes of variable size. Its surface is glassy when freshly broken, and it is very aromatic.

## OPIUM U. S. P.

**English name:** Opium.

**Synonyms:** Gum Opium, Meconium, Thebaica.

**Botanical origin:** *Papaver somniferum* Linné and its variety *album* De Candolle. (Fam. Papaveraceæ.)

**Part used:** Milky exudation (latex).

**Impurities:** None given in U. S. P.

**Assay:** Not less than 9.5 per cent. of anhydrous morphine.

**Ash:** None given.

**Habitat:** Asia Minor and China; also cultivated.

### Description:

Opium occurs as rounded masses, as rectangular cakes, or as large flat cakes. It is a solidified latex. The outline of the masses and cakes is variable. The size is variable. The texture is waxy. The color varies from brown to black. The outer surface frequently has adhering to it fragments of leaves and fruits of rumex. The fracture is uneven. The odor is narcotic. The taste is bitter.

**Constituents:** Alkaloids (morphine, codeine, narcotine, narceine, etc.), meconic acid, glucose, gum, pectin, caoutchouc, wax, coloring matter, etc.

**Dose:** 0.06 Gm. (1 grain).

### Preparations:

Acetum Opii N. F.; Dose, 0.5 mil (8 min.).

Extractum Opii; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

Linimentum Opii Compositum N. F.

Mistura Camphoræ Acida N. F.; Dose, 8 mils (2 fl. drs.).

Mistura Carminativa N. F.; Dose (infants') 0.5 mil (8 min.).

Mistura Glycyrrhizæ Composita; Dose, 10 mils (2  $\frac{1}{2}$  fl. drs.).

Mistura Opii et Chloroformi Composita N. F.; Dose, 2 mils (30 min.).

Mistura Opii et Rhei Composita N. F.; Dose, 2 mils (30 min.).

Mistura Opii et Sassafras N. F.; Dose (infants'), 0.3 mil (5 min.).

Opii Pulvis; Dose, 0.06 Gm. (1 grain).

Opium Deodoratum; Dose, 0.06 Gm. (1 grain).

Opium Granulatum; Dose, 0.06 Gm. (1 grain).

Pilulæ Opii, Digitalis et Quininæ N. F.; Dose, 1 pill.

Pilulæ Opii et Camphoræ N. F.; Dose, 1 pill.

Pilulæ Opii et Plumbi N. F.; Dose, 1 pill.

Pulvis Cretæ et Opii Aromaticus N. F.; Dose, 1 Gm. (15 grains).

Pulvis Ipecacuanhæ et Opii; Dose, 0.5 Gm. (8 grains).

Pulvis Kino et Opii Compositus N. F.; Dose, 1 Gm. (15 grains).

Syrupus Ipecacuanhæ et Opii N. F.; Dose, 4 mils (1 fl. dr.).

Tinctura Ipecacuanhæ et Opii N. F.; Dose, 0.5 mil (8 min.).

Tinctura Opii; Dose, 0.5 mil (8 min.).

Tinctura Opii Camphorata; Dose, 4 mils (1 fl. dr.).

Tinctura Opii Crocata N. F.; Dose, 0.6 mil (10 min.).

Tinctura Opii Deodorata; Dose, 0.5 mil (8 min.).

Tinctura Pectoralis N. F.; Dose, 0.6 mil (10 min.).

## **LACTUCARIUM**

**1. Under surface of cake. 2. Upper surface of cake.  
3. Broken surfaces.**

## LACTUCARIUM (Lactucar.) U. S. P.

**English name:** Lactucarium.

**Synonyms:** Lettuce Opium.

**Botanical origin:** *Lactuca virosa* Linné. (Fam. *Compositæ*.)

**Part used:** Dried milk-juice (latex).

**Impurities:** None given in U. S. P.

**Assay:** Not more than 15 per cent. moisture.

**Ash:** Not more than 10 per cent.

**Habitat:** Central and Southern Europe; cultivated.

### Description:

Lactucarium occurs as cakes of variable size. Lactucarium is a latex (milk-juice). The cakes have a maximum diameter of 5.5 cm. and a maximum thickness of 3 cm. The texture is waxy. The color varies from grayish red to reddish black. The fracture is uneven. The fractured surface varies from light gray to nearly black. The odor is aromatic. The taste is aromatic and bitter.

**Constituents:** Alkaloids (lactucine, hyoscyamine), bitter principles, wax, sugar, gum, pectin, resin, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Syrupus Lactucarii (from Tincture); Dose, 10 mils ( $2\frac{1}{2}$  fl. drs.).  
Tinctura Lactucarii; Dose, 2 mils (30 min.).

## **GUTTA PERCHA**

**1.** Oblong slice. **2.** Rough surface. **3.** Rod of purified gutta percha.

## GUTTA PERCHA N. F.

**English name:** Gutta-percha.

**Synonyms:** Gutta Taban, Gummi Plasticum.

**Botanical origin:** Various trees of genus *Palaquium* Blanco. (Fam. *Sapotaceæ*.)

**Part used:** Milky exudate (latex).

**Impurities:** Not more than 10 per cent. of undissolved residue when dissolved in chloroform, oil turpentine, etc.

**Assay:** None given.

**Ash:** Not more than 5 per cent.

**Habitat:** East Indies, East Africa; cultivated.

**Description:**

Gutta-percha occurs as cakes, sheets, rods or as irregular pieces. It is a latex. The cakes, sheets and pieces are of variable size. The texture is like rubber. The color varies from yellowish white to grayish, usually with reddish streaks. The uncut surface is smooth, the cut surface rough and mottled. Gutta-percha has no fracture. There is no characteristic odor and taste.

**Dose:** None given.

**Preparations:**

Liquor Guttæ Perchæ. (Used externally.)

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## ELATERINUM (Elaterin.) U. S. P.

**English name:** Elaterin.

**Synonyms:** None.

**Botanical origin:** *Ecballium Elaterium* (Linné) A. Richard. (Fam. *Cucurbitaceæ*.)

**Part used:** Neutral principle.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** No ash from 0.1 Gm. of elaterin.

**Habitat:**

**Description:**

Elaterin occurs as a white powder or white crystals; the odor is not distinct; the taste is bitter and acrid.

**Dose:** 0.003 Gm. ( $\frac{1}{20}$  grain).

**Preparations:**

Trituratio Elaterini; Dose, 0.03 Gm. ( $\frac{1}{2}$  grain).

**KINO**

1. Angled fragments of variable size.

2.

## **KINO U. S. P.**

**English name:** Kino.

**Synonyms:** Gum Kino.

**Botanical origin:** *Pterocarpus Marsupium* Roxburgh.  
(Fam. *Leguminosæ*.)

**Part used:** Spontaneously dried juice.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 45 per cent. of alcoholic extractive; not more than 12 per cent. moisture.

**Ash:** Not more than 3 per cent.

**Habitat:** India and Ceylon.

### **Description:**

Kino occurs as small, angled fragments. Kino is a dried juice. The fragments rarely exceed 10 mm. in length or width. The color varies from reddish black to black. The surface is angled and shiny. The fracture is conchoidal. The odor is not distinct. The taste is very strongly astringent.

**Constituents:** Kinotannic acid and other principles, coloring matter, gum, etc.

**Dose:** 0.5 Gm. (8 grains).

### **Preparations:**

Pulvis Kino et Opii Compositus N. F.; Dose, 1 Gm. (15 grains).  
Tinctura Kino; Dose, 4 mils (1 fl. dr.).  
Tinctura Kino et Opii Composita N. F.; Dose, 4 mils (1 fl. dr.).

**ALOE (SOCOTRINE)**

1, Fragment of mass. 2, Broken surface.

## **ALOE U. S. P.**

### **(1) Socotrine Aloes**

**English name:** Aloes.

**Synonyms:** Socotrine Aloes.

**Botanical origin:** *Aloe Perryi* Baker. (Fam. *Liliaceæ*.)

**Part used:** Inspissated juice of the leaves.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 50 per cent. soluble in cold water.

**Ash:** Not more than 4 per cent.

**Habitat:** Africa, West Indies and Barbados Islands.

#### **Description:**

Socotrine Aloes occurs as masses packed in boxes or in animal skins. Socotrine aloes is an inspissated juice. The outline of the broken pieces is irregular. The texture is waxy. The color varies from a light to a dark yellowish brown. The surface is dull or slightly shiny. The fracture is conchoidal. The odor is aromatic. The taste is very strongly bitter and pungent.

**Constituents:** Aloin, emodin, resin, volatile oil, etc.

**Dose:** 0.25 Gm. (4 grains).

#### **Preparations:**

Extractum Aloes N. F.; Dose, 0.125 Gm. (2 grains).

Extractum Colocynthidis Compositum; Dose, 0.25 Gm. (4 grains).

Pilulæ ad Prandium N. F. (4 kinds); Dose, 1 pill.

Pilulæ Aloes; Dose, 2 pills.

Pilulæ Aloes et Asafetidæ N. F.; Dose, 1 pill.

Pilulæ Aloes et Ferri N. F.; Dose, 2 pills.

Pilulæ Aloes et Mastiches N. F.; Dose, 2 pills.

Pilulæ Aloes et Myrrhæ N. F.; Dose, 2 pills.

Pilulæ Aloes et Podophylli Compositæ N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Podophylli N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Scammoniæ Compositæ N. F.; Dose, 1 pill.

Pulvis Aloes et Canellæ N. F.; Dose, 0.3 Gm. (5 grains).

Tinctura Aloes; Dose, 2 mils (30 min.).

Tinctura Aloes et Myrrhæ N. F.; Dose, 2 mils (30 min.).

Tinctura Benzoini Composita; Dose, 2 mils (30 min.).

## **ALOE (CURAÇAO)**

**1, 2.** Two fragments of a large cake.

## **ALOE U. S. P.**

### **(2) Curaçao Aloes**

**English name:** Aloes.

**Synonyms:** Curaçao Aloes.

**Botanical origin:** *Aloe vera* Linné. (Fam. *Liliaceæ*.)

**Part used:** Inspissated juice of the leaves.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 60 per cent. soluble in cold water.

**Ash:** Not more than 4 per cent.

**Habitat:** Africa, West Indies and Barbados Islands.

#### **Description:**

Curaçao Aloes occurs as solidified masses packed in boxes or large gourds. Curaçao aloes is an inspissated juice. The outline of the broken pieces is irregular. The size of the pieces is variable. The texture is waxy. The color varies from orange brown to blackish brown. The surface is dull and smooth. The fracture is conchoidal. The odor is strongly aromatic. The taste is very strongly bitter and pungent.

**Constituents:** Aloin, emodin, resin, volatile oil, etc.

**Dose:** 0.25 Gm. (4 grains).

#### **Preparations:**

Extractum Aloes N. F.; Dose, 0.125 Gm. (2 grains).

Extractum Colocynthidis Compositum; Dose, 0.25 Gm. (4 grains).

Pilulæ ad Prandium N. F. (4 kinds); Dose, 1 pill.

Pilulæ Aloes; Dose, 2 pills.

Pilulæ Aloes et Asafetidæ N. F.; Dose, 1 pill.

Pilulæ Aloes et Ferri N. F.; Dose, 2 pills.

Pilulæ Aloes et Mastiches N. F.; Dose, 2 pills.

Pilulæ Aloes et Myrrhæ N. F.; Dose, 2 pills.

Pilulæ Aloes et Podophylli Compositæ N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Podophylli N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Scammoniæ Compositæ N. F.; Dose, 1 pill.

Pulvis Aloes et Canellæ N. F.; Dose, 0.3 Gm. (5 grains).

Tinctura Aloes; Dose, 2 mils (30 min.).

Tinctura Aloes et Myrrhæ N. F.; Dose, 2 mils (30 min.).

Tinctura Benzoini Composita; Dose, 2 mils (30 min.).

**ALOE (CAPE)**

1, 2, Two fragments of a large cake.

## **ALOE U. S. P.**

### **(3) Cape Aloes**

**English name:** Aloes.

**Synonyms:** Cape Aloes.

**Botanical origin:** *Aloe ferox* Miller. (Fam. *Liliaceæ*.)

**Part used:** Inspissated juice.

**Impurities:** None given.

**Assay:** Not less than 60 per cent. soluble in cold water; contains not more than 10 per cent. moisture.

**Ash:** Not more than 4 per cent.

**Habitat:** Africa, West Indies and Barbados Islands.

#### **Description:**

Cape Aloes occurs as solidified masses packed in boxes. Cape aloes is an inspissated juice. The outline of the broken pieces is irregular. The size of the pieces is variable. The texture is vitreous. The color is dark green. The surface is shiny and divided by fissures into numerous slightly adhering fragments. The fracture is even. The odor is strongly aromatic. The taste is very strongly bitter and pungent.

**Constituents:** Aloin, emodin, resin, volatile oil, etc.

**Dose:** 0.25 Gm. (4 grains).

#### **Preparations:**

Extractum Aloes N. F.; Dose, 0.125 Gm. (2 grains).

Extractum Colocynthidis Compositum; Dose, 0.25 Gm. (4 grains).

Pilulæ ad Prandium N. F. (4 kinds); Dose, 1 pill.

Pilulæ Aloes; Dose, 2 pills.

Pilulæ Aloes et Asafetidæ N. F.; Dose, 1 pill.

Pilulæ Aloes et Ferri N. F.; Dose, 2 pills.

Pilulæ Aloes et Mastiches N. F.; Dose, 2 pills.

Pilulæ Aloes et Myrrhæ N. F.; Dose, 2 pills.

Pilulæ Aloes et Podophylli Compositæ N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Podophylli N. F.; Dose, 1 pill.

Pilulæ Aloes, Hydrargyri et Scammoniæ Compositæ N. F.; Dose, 1 pill.

Pulvis Aloes et Canellæ N. F.; Dose, 0.3 Gm. (5 grains).

Tinctura Aloes; Dose, 2 mils (30 min.).

Tinctura Aloes et Myrrhæ N. F.; Dose, 2 mils (30 min.).

Tinctura Benzoini Composita; Dose, 2 mils (30 min.).

## **GAMBIR**

**1.** Five nearly square cakes. **2.** Rectangular cake. **3.** Cut surface.

## GAMBIR U. S. P.

**English name:** Gambir.

**Synonyms:** Pale Catechu.

**Botanical origin:** Leaves and twigs of *Ourouparia Gambir* (Hunter) Baillon. (Fam. *Rubiaceæ*.)

**Part used:** Dried extract.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 65 per cent. soluble in water, 60 per cent. soluble in alcohol.

**Ash:** Not more than 9 per cent.

**Habitat:** East India Islands.

### Description:

Gambir occurs as cubical or rectangular pieces. Gambir is an extract. The maximum length of the rectangular pieces is 4 cm., the maximum width is 3 cm. The color varies from yellowish brown to black. The texture is starchy. The surface is sunken and frequently striated. The fracture is uneven. The fractured surface is dull and yellowish or grayish brown. The odor is not distinct. The taste is bitter and very strongly astringent.

**Constituents:** Catechutannic acid, catechin, gum, extractive, quercetin, etc.

**Dose:** 1 Gm. (15 grains).

### Preparations:

Pulvis Gambir Compositus N. F.; Dose, 1.3 Gm. (20 grains).

Tinctura Gambir Composita; Dose, 4 mils (1 fl. dr.).

Trochisci Gambir N. F.; Dose, 1 troche.

## **CAMPHORA**

1, 2, 3, Cakes and fragments of camphor.

## CAMPHORA (Camph.) U. S. P.

**English name:** Camphor.

**Synonyms:** Gum Camphor.

**Botanical origin:** *Cinnamomum Camphora* (Linné)  
Nees et Ebermaier. (Fam. Lauraceæ.)

**Part used:** Ketone.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 0.05 per cent.

**Habitat:** China and Japan; cultivated in Southern United States.

### Description:

Camphor occurs as cakes or as broken pieces. Camphor is a ketone. The size of the cake is variable. The color is grayish white. The texture is waxy. The surface is rough, crystalline and fissured. The fracture is uneven. The fractured surface is angled, shiny and transparent. The odor is aromatic. The taste is pungent.

**Dose:** By mouth, 0.2 Gm. (3 grains). Hypodermic, 0.1 Gm. (1½ grains).

### Preparations:

*Aqua Camphoræ*; Dose, 10 mils (2½ fl. drs.).

*Ceratum Camphoræ* N. F.

*Emplastrum Fuscum* N. F.

*Linimentum Belladonnæ*.

*Linimentum Camphoræ*.

*Linimentum Chloroformi*.

*Linimentum Saponis*.

*Mistura Camphoræ Acida* N. F.; Dose, 8 mils (2 fl. drs.).

*Mistura Camphoræ Aromatica* N. F.; Dose, 8 mils (2 fl. drs.).

*Spiritus Camphoræ*; Dose, 1 mil (15 min.).

*Tinctura Opii Camphorata*; Dose, 4 mils (1 fl. dr.).

*Unguentum Camphoræ* N. F.

*Unguentum Fuscum* N. F.

## **COCCUS**

1, 2, Black cochineal (unofficial). 3, 4, The official all-varied cochineal.

## CHAPTER XX

### DRUGS OF ANIMAL ORIGIN

THE drugs of animal origin vary so much that no one set of characters will cover all the different drugs, therefore the introduction to this group is omitted. Each drug, however, is minutely described in the following pages of the text.

*Coccus, cantharides* and *gelatin* are of animal origin.

*Coccus* is collected in Mexico from cactus plants. Only the bugs covered with the natural wax are official.

*Cantharides* is a beetle, very characteristic in structure and having well known properties.

*Gelatin* is an animal mucilage prepared from bones. It is used largely as an adhesive agent, etc.

#### COCCUS U. S. P.

**English name:** Cochineal.

**Synonyms:** Coccionella.

**Entomological origin:** *Coccus cacti* Linné. (Fam. *Coccidae*.)

**Part used:** Dried female insect.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** Not more than 6 per cent.

**Habitat:** On species of cacti growing in Mexico.

**Description:**

*Coccus* occurs as entire or broken pieces. *Coccus* is an insect. It has a maximum length of 6 mm. and a maximum width of 6 mm. The texture is waxy. The color varies from gray to grayish purple. The upper surface is convex-channeled. The under surface is concave and has numerous larvæ. The odor is not distinct. The taste is bitter.

**Constituents:** Carminic acid (carmine red), wax (coccerin), fixed oil, fats, gum, etc.

**Preparations:**

Liquor Coccii N. F. (For coloring.)

## **CANTHARIS**

1, Mass of beetles. 2, Large beetle. 3, Small beetle.  
4, Under surface of a beetle.

## CANTHARIS U. S. P.

**English name:** Cantharides.

**Synonyms:** Spanish Flies, Russian Flies.

**Entomological origin:** *Cantharis vesicatoria* (Linné)  
DeGeer. (Fam. Meloidea, order Coleoptera.)

**Part used:** Dried beetles.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 0.6 per cent. of cantharidin nor more than 10 per cent. of moisture.

**Ash:** Not more than 9 per cent.

**Habitat:** Europe and Asia.

### Description:

Cantharides occurs as entire and as broken pieces. Cantharides is a beetle. Cantharides has a maximum length of 25 mm. and a maximum width of 8 mm. The color varies from bluish green to yellowish green. The outline is oblong; the body is vertically compressed. The head is triangular and separated by a groove into two divisions. The eyes are small and lateral. The prothorax is angulate. The neck is distinct. The antennae are thread-like and 11-jointed. The mandibles are short and thick. There are three pairs of legs and each leg is 5-jointed except the last pair, which is 4-jointed and covered with white unicellular hairs. The wing sheaths are longitudinally grooved, and they usually inclose the brown wings. The odor is aromatic. The taste is pungent and acrid.

**Constituents:** Cantharidin, fat, oil, volatile principle, chlorophyl, phosphates, acids, etc.

### Preparations:

Ceratum Cantharidis.

Collodium Cantharidatum.

Emplastrum Cantharidis.

Tinctura Cantharidis; Dose, 0.1 mil ( $1\frac{1}{2}$  min.).

**CETACEUM**

Fragment of large cake.

## **CETACEUM (Cetac.) U. S. P.**

**English name:** Spermaceti.

**Synonyms:** None.

**Origin:** *Physeter macrocephalus* Linné. (Fam. *Physeteridae*.) Sperm Whale.

**Part used:** Concrete fatty substance from the head.

**Impurities:** None given in U. S. P.

**Assay:** Specific gravity 0.938 to 0.944 at 25° C.; dissolves completely in 50 parts of boiling alcohol.

**Ash:** None given officially.

### **Description:**

White or yellowish-gray *cakes*; when freshly broken the surface is opaque, crystalline and slightly shiny; *odor* very slight; *taste* not distinct; becomes yellowish and rancid on exposure.

**Constituents:** Cetin; esters of lauric, stearic and myristic acids; etc.

**Dose:** Not used internally; only pharmaceutically.

### **Preparations:**

None; ingredient of cerates; etc.

**CERA FLAVA**

*Fragment of wax.*

## **CERA FLAVA (Cer. Flav.) U. S. P.**

**English name:** Yellow Wax.

**Synonyms:** Beeswax.

**Entomological origin:** *Apis mellifera* Linné. (Fam. *Apidae*.)

**Part used:** Wax from the honeycomb.

**Impurities:** None stated in U. S. P.

**Assay:** Specific gravity 0.950 to 0.960 at 25° C.; melting-point 62° to 65° C.; ester value not less than 72 nor more than 77.

**Ash:** None given officially.

### **Description:**

*Cakes* of variable size and form, according to container in which it was cooled; color yellowish or yellowish brown; odor aromatic, honey-like; taste bland and slightly pungent.

**Constituents:** Cerin, ceryl alcohol, melissic acid, myricin, aromatic and coloring matters, etc.

**Dose:** Not used internally.

### **Preparations:**

Cera Alba. (Used pharmaceutically and technically.)

## MEL U. S. P.

**English name:** Honey.

**Synonyms:** None.

**Entomological origin:** *Apis mellifera* Linné. (Fam. *Apidae*.)

**Part used:** Saccharine secretion.

**Impurities:** None permitted.

**Assay:** Specific gravity not less than 1.370.

**Ash:** Not more than 0.3 per cent.

**Description:**

Honey is a viscous liquid of a yellowish color. Upon standing it becomes crystalline. The odor is aromatic. The taste is sweet.

**Constituents:** Coloring matter, formic acid, wax, dextrose, levulose, gum, etc.

**Dose:** None given.

**Preparations:**

Mel Depuratum.

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## DIASTASUM U. S. P.

**English name:** Diastase.

**Synonyms:** Diastase of Malt.

**Origin:** Malt.

**Part used:** A mixture containing amylolytic enzymes.

**Impurities:** None mentioned in U. S. P.

**Assay:** Converts not less than 50 times its weight of potato starch into sugars in 30 minutes.

**Ash:** None stated in U. S. P.

**Description:**

Yellowish white, amorphous powder, or scales; odor and taste not distinct.

**Constituents:** Amylolytic enzymes of undefined nature.

**Dose:** 0.5 Gm. (8 grains).

**Preparations:**

None.

## FEL BOVIS U. S. P.

**English name:** Olgall.

**Synonyms:** Ox Bile.

**Origin:** *Bos taurus* Linné. (Fam. *Bovidæ*.)

**Part used:** Entire secretion.

**Impurities:** None given in U. S. P.

**Assay:** None given.

**Ash:** None stated officially. —

**Description:**

Dark, brownish green liquid; when shaken with water it becomes frothy; specific gravity, 1.015 to 1.025 at 25° C.

**Constituents:** Glycocholates and taurocholates of sodium and potassium; the bile-pigments bilirubin and biliverdin; fat, soaps, mucin, albuminous matter, choline, cholesterol, traces of urea, potassium, sodium, calcium and magnesium phosphates, potassium and sodium chlorides, iron, manganese and silica.

**Dose:** None given; not used so much.

**Preparations:**

Extractum Fellis Bovis; Dose, 0.1 Gm. ( $1\frac{1}{2}$  grains).

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## PIX LITHANTHRACIS (Pix Lith.) N. F.

**English name:** Coal Tar.

**Synonyms:** Pix Carbonis.

**Origin:** From coal.

**Part used:** By-product in the manufacture of illuminating gas.

**Impurities:** None given officially.

**Assay:** None given.

**Ash:** Not more than 2 per cent.

**Description:**

Black, thick liquid or semi-solid; heavier than water; odor aromatic, naphthalene-like; taste strongly pungent.

**Dose:** Not used internally.

**Preparations:**

Liquor Picis Carbonis N. F. (Used externally.)

## **SUPRARENALUM SICCUM** **(Supraren. Sicc.) U. S. P.**

**English name:** Dried Suprarenals.

**Synonyms:** Desiccated Suprarenal Glands.

**Origin:** Animals used for food by man.

**Part used:** Whole fresh glands, cleaned, dried, freed from fat, and powdered. One part represents 6 parts of fresh gland.

**Impurities:** None given in U. S. P.

**Assay:** Biological; 1 Gm. contains the equivalent of 10 milligrams of lævo-methylamino-ethanol-catechol. Must not contain more than 7 per cent. of moisture.

**Ash:** Not more than 7 per cent.

**Description:**

Yellowish brown, amorphous powder; odor slightly aromatic; taste slight.

**Constituents:** Epinephrine (suprarenine) and other principles.

**Dose:** 0.25 Gm. (4 grains).

**Preparations:**

None.

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## **PARAFFINUM (Paraff.) U. S. P.**

**English name:** Paraffin.

**Synonyms:** Hard Paraffin, Paraffin Wax.

**Origin:** Petroleum.

**Part used:** Mixture of solid hydrocarbons.

**Impurities:** None given in U. S. P.

**Assay:** Specific gravity about 0.900 at 25°C.; melts at 50° to 57° C.

**Ash:** None given officially.

**Description:**

Grayish white solid; odor and taste not distinct; slightly greasy to the touch.

**Constituents:** Solid hydrocarbons.

**Dose:** Not used internally.

**Preparations:**

None.

## **SEVUM PRÆPARATUM (Sev. Præp.) U. S. P.**

**English name:** Prepared Suet.

**Synonyms:** Mutton Suet.

**Origin:** *Ovis aries* Linné. (Fam. *Bovidæ*.)

**Part used:** Purified internal fat of the abdomen of sheep.

**Impurities:** Rancid fat must not be used.

**Assay:** Melts between 45° and 50° C.; congeals between 37° and 40° C.; saponification value not less than 193 nor more than 200; iodine value not less than 33 nor more than 48.

**Ash:** None given.

**Description:**

White, solid fat; odor nearly wanting, not distinct; taste bland when fresh but becoming rancid on prolonged exposure.

**Constituents:** Stearin, palmitin, olein, etc.

**Dose:** Used only pharmaceutically.

**Preparations:**

Sevum Benzoinatum N. F. (Ointment base.)

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## **HYPOPHYSIS SICCA (Hypophysis Sic.) U. S. P.**

**English name:** Desiccated Hypophysis.

**Synonyms:** Desiccated Pituitary Body.

**Origin:** Cattle.

**Part used:** Posterior lobe from pituitary body of cattle, cleaned, dried and powdered.

**Impurities:** None given in U. S. P.

**Assay:** None given officially.

**Ash:** None stated.

**Description:**

Yellowish or grayish, amorphous powder; odor peculiar; taste not distinctive; only partially soluble in water.

**Constituents:** Not definitely determined.

**Dose:** 0.03 Gm. (1/2 grain).

**Preparations:**

Liquor Hypophysis; Dose, 1 mil (15 min.).

## **PETROLATUM LIQUIDUM (Petrolat. Liq.) U. S. P.**

**English name:** Liquid Petrolatum.

**Synonyms:** Mineral Oil, Liquid Paraffin.

**Origin:** From petroleum.

**Part used:** Natural mixture of liquid hydrocarbons.

**Impurities:** None mentioned in U. S. P.

**Assay:** Specific gravity 0.828 to 0.905 at 25°C. The *light* liquid petrolatum has a viscosity of not more than 3, *heavy* liquid petrolatum not less than 3.1.

**Ash:** None given officially.

**Description:**

Colorless, transparent, oily liquid; *odorless; tasteless.*

**Constituents:** Liquid hydrocarbons.

**Dose:** 15 mils (4 fl. drs.).

**Preparations:**

Petroxolinum Liquidum N. F. (Used as vehicle externally.)  
Petroxolinum Spissum N. F. (Ointment base.)

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## **PETROLATUM (Petrolat.) U. S. P.**

**English name:** Petrolatum.

**Synonyms:** Petroleum Jelly, Petrolatum Ointment.

**Origin:** Petroleum.

**Part used:** Purified natural mixture of semi-solid hydrocarbons.

**Impurities:** None stated in U. S. P.

**Assay:** Specific gravity 0.820 to 0.865 at 60°C.; melting-point 38° to 54° C.

**Ash:** None mentioned officially.

**Description:**

Yellow to light amber, unctuous *mass*; *odor* and *taste* very faint.

**Constituents:** Semi-solid hydrocarbons.

**Dose:** Used externally and as ointment base.

**Preparations:**

Emulsum Petrolati N. F.; Dose, 15 mils (4 fl. drs.).  
Petrolatum Album. (Used externally and pharmaceutically.)

## ADEPS U. S. P.

**English name:** Lard.

**Synonyms:** Prepared Lard.

**Origin:** *Sus scrofa* var. *domestica* Gray. (Fam. *Suidæ*.)

**Part used:** Purified internal fat of the abdomen.

**Impurities:** None stated in U. S. P.

**Assay:** Iodine value not less than 46 nor more than 70; saponification value not less than 195 nor more than 203.

**Ash:** None stated.

### Description:

Soft, white unctuous solid; odor slight; taste bland and not distinct; melts between 36° and 42° C.; gets rancid on keeping.

**Constituents:** Stearin, olein, palmitin, etc.

**Dose:** Used pharmaceutically and in the household.

### Preparations:

Adeps Benzoinatus. (Used externally and pharmaceutically.)

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## ADEPS LANÆ (Adeps Lan.) U. S. P.

**English name:** Wool Fat.

**Synonyms:** Anhydrous Lanolin.

**Origin:** *Ovis aries* Linné. (Fam. *Bovidæ*.)

**Part used:** Purified sheep's-wool fat.

**Impurities:** None given in U. S. P.

**Assay:** Iodine value not less than 18 nor more than 28.

**Ash:** Not more than 0.1 per cent.; not alkaline to litmus paper.

### Description:

Light yellow stringy (when pulled), tenacious, unctuous mass; odor faint; melts between 38° and 42° C.

**Constituents:** Free fatty acids, fatty acid esters of cholesterol and other alcohols.

**Dose:** Used externally only.

### Preparations:

Adeps Lanæ Hydrosus. (Used externally and pharmaceutically.)

## MOSCHUS (Mosch.) U. S. P.

**English name:** Musk.

**Synonyms:** Tonquin Musk, Deer Musk.

**Origin:** *Moschus moschiferus* Linné. (Fam. *Moschidae*.)

**Part used:** Dried secretion from the preputial follicles.

**Assay:** Not more than 15 per cent. of moisture; not less than 50 per cent. is soluble in water and 10 per cent. in alcohol.

**Ash:** Not more than 8 per cent.

**Habitat:**

**Description:**

Small, blackish, irregular granules; glistening and somewhat oily; odor peculiar, powerful and persistent; taste somewhat bitter.

**Constituents:** Volatile odorous substances; cholesterol, fat, wax, gelatinous and albuminous compounds; salts.

**Dose:** 0.25 Gm. (4 grains).

**Preparations:**

Tinctura Moschi; Dose, 4 mils (1 fl. dr.). —

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## PANCREATIN (Pancreat.) U. S. P.

**English name:** Pancreatin.

**Synonyms:** None.

**Origin:** *Sus scrofa* var. *domestica* Gray (Fam. *Suidæ*) ; or *Bos taurus* Linné (Fam. *Bovidæ*).

**Part used:** Mixture of enzymes.

**Impurities:** None stated in U. S. P.

**Assay:** Converts not less than 25 times its weight of starch into soluble carbohydrates.

**Ash:** None stated officially.

**Description:**

Cream colored amorphous powder; odor faint, aromatic; taste peculiar.

**Constituents:** The enzymes trypsin, amylopsin, steapsin, myopsin and rennin.

**Preparations:**

Liquor Pancreatini N. F.; Dose, 4 mils (1 fl. dr.).

Pulvis Pancreatini Compositus N. F. (Used for peptonizing milk.)

## **THYROIDUM SICCUM (Thyroid. Sicc.) U. S. P.**

**English name:** Dried Thyroids.

**Synonyms:** Desiccated Thyroid Glands.

**Origin:** Animals used for food by man.

**Part used:** Whole gland, freed from connective tissue and fat, dried and powdered.

**Impurities:** None given in U. S. P.

**Assay:** Not less than 0.17 per cent. nor more than 0.23 per cent. of iodine in thyroid combination. Must not contain more than 6 per cent. moisture.

**Ash:** Must not exceed 5 per cent.

**Description:**

Yellowish, amorphous powder; slightly aromatic; taste distinctive.  
One part represents five parts of fresh gland.

**Constituents:** Iodine organically combined.

**Dose:** 0.1 Gm. (1½ grains).

**Preparations:**

None.

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## **RENNINUM N. F.**

**English name:** Rennin.

**Synonyms:** None in common use.

**Origin:** *Bos taurus* Linné. (Fam. *Bovidæ*.)

**Part used:** Milk-curdling enzyme from the stomach of the calf.

**Impurities:** None given officially.

**Assay:** Coagulates not less than 25,000 times its own weight of fresh milk.

**Ash:** None stated.

**Description:**

Grayish yellow powder or scales; odor slightly aromatic; taste slightly saline; slightly hygroscopic; deteriorates rapidly on keeping.

**Constituents:** Enzymes of undefined composition.

**Dose:** None given officially.

**Preparations:**

Elixir Pepsini et Rennini Compositum N. F.; Dose, 8 mils (2 fl. drs.).

Insect Flowers, 400 lbs. Always wired and in same style package.

## GLOSSARY OF BOTANICAL TERMS

[Definitions derived from various authorities:  
Gray, Kraemer, Mansfield]

**Acaulescent.** Stemless or apparently so, or with stem subterranean.  
**Achene.** A small dry and hard 1-celled, 1-seeded, indehiscent fruit.  
**Acuminate.** Tapering at the end.  
**Acute.** Terminating with a sharp or well defined angle.  
**Adnate.** United, as the inferior ovary with the calyx-tube. Adnate Anther, one attached for its whole length to the inner or outer face of the filament.  
**Æstivation.** The arrangement of the parts of the perianth in the bud.  
**Albumen.** Any deposit of nutritive material accompanying the embryo.  
**Alliaceous.** Having the smell or taste of garlic.  
**Alternate** (of leaves, etc.). Not opposite to each other on the axis, but arranged singly at different heights.  
**Ament.** A catkin, or scaly spike.  
**Amphitropous** (ovule or seed). Half-inverted and straight, with the hilum lateral.  
**Anastomosing.** Connecting by cross-veins and forming a network.  
**Andræcium.** Aggregate of stamens in the flower.  
**Androgynous** (inflorescence). Composed of both staminate and pistillate flowers.  
**Angiospermous.** Having the seeds borne within a pericarp.  
**Annular.** In the form of a ring.  
**Anther.** The polleniferous part of a stamen.  
**Apetalous.** Having no petals.  
**Apothecia.** Disk-like or cup-shaped bodies on the surface of the thallus.  
**Appressed.** Lying close and flat against.  
**Aril.** An appendage growing at or about the hilum of a seed.  
**Articulate.** Jointed; having a node or joint.  
**Attenuate.** Slenderly tapering; becoming very narrow.  
**Auricle.** An ear-shaped appendage.  
**Awn.** A bristle-shaped appendage.  
**Axil.** The angle formed by a leaf or branch with the stem.  
**Axis.** The central line of any organ or support of a group of organs; a stem, etc.  
**Barbed.** Furnished with rigid points or short bristles, usually reflexed like the barb of a fish-hook.  
**Bast Fibers.** Strengthening cells of the cortex.  
**Bearded.** Bearing a long awn, or furnished with long or stiff hairs.  
**Berry.** A fruit the whole pericarp of which is fleshy or pulpy.  
**Biennial.** Of two years' duration.  
**Bifid.** Two-cleft.  
**Bilabiate.** Two-lipped.  
**Bilocular.** Two-celled.  
**Bisexual.** Having both stamens and pistils.  
**Bivalvular.** With two valves.  
**Blade.** The expanded portion of a leaf, etc.  
**Bract.** A more or less modified leaf subtending a flower or belonging to an inflorescence.  
**Bractlet.** A secondary bract, as one upon the pedicel of a flower.  
**Bud.** The rudimentary state of a stem or branch; an unexpanded flower.  
**Bulb.** A subterranean leaf-bud with fleshy scales or coats.  
**Caducous.** Falling off very early.  
**Calyx.** The outer perianth of the flower.  
**Cambium.** Layer of cells between the cortex and the wood.  
**Campanulate.** Bell-shaped; cup-shaped with a broad base.  
**Campylotropous** (ovule or seed). So curved as to bring the apex and base nearly together.  
**Canescent.** Hoary with gray pubescence.

**Capillary.** Hair-like.  
**Capeular.** Belonging to or of the nature of a capsule.  
**Capsule.** A dry dehiscent fruit composed of more than one carpel.  
**Carpel.** A simple pistil, or one member of a compound pistil.  
**Carpophore.** The slender prolongation of the floral axis which in the Umbelliferae supports the pendulous ripe carpels.  
**Caryopsis.** A grain, as of Grasses; a seed-like fruit with a thin pericarp adnate to the contained seed.  
**Catkin.** An ament.  
**Caudate.** Having a slender tail-like appendage.  
**Cell.** One of the minute vesicles, of very various forms, of which plants are formed; any structure containing a cavity, as the cells of anther, ovary, etc.  
**Cellular (tissue).** Composed of short transparent thin-walled cells, in distinction from fibrous or vascular.  
**Channeled.** Deeply grooved longitudinally, like a gutter.  
**Chlorophyl.** The green coloring-matter within the cells of plants.  
**Circinate.** Coiled from the top downward, as the young frond of a fern.  
**Coccus (pl. Coccii).** One of the parts into which a lobed fruit with one-seeded cells splits.  
**Cohesion.** The union of one organ with another of like nature.  
**Commissure.** The surface by which one carpel joins another, as in the Umbelliferae.  
**Compound.** Composed of 2 or more similar parts united into one whole.  
Compound leaf, one divided into separate leaflets.  
**Compressed.** Flattened, especially laterally.  
**Coniferous.** Cone-bearing.  
**Convolute.** Rolled up longitudinally.  
**Cordate.** Heart-shaped with the point upward.  
**Coriaceous.** Leathery in texture.  
**Corm.** The enlarged fleshy base of a stem, bulb-like but solid.  
**Corolla.** The inner perianth, of distinct or connate petals.  
**Corrugate.** Wrinkled or in folds.  
**Cortex.** Bark of the root or stem.  
**Corymb.** A flat-topped or convex open flower-cluster, in the stricter use of the word equivalent to a contracted raceme progressing in its flowering from the margin inward.  
**Cotyledons.** The foliar portion or first leaves (one, two, or more) of the embryo as found in the seed.  
**Crateriform.** In the shape of a saucer or cup, hemispherical or more shallow.  
**Crenate.** Having rounded teeth on the leaf margin.  
**Cruciate.** Cross-shaped.  
**Crustaceous.** Of hard and brittle texture.  
**Culm.** The peculiar stem of Sedges and Grasses.  
**Cuneate.** Wedge-shaped; triangular with the acute angle downward.  
**Cuspidate.** See *Mucronate*.  
**Cyme.** A usually broad and flattish determinate inflorescence, i.e., with its central or terminal flowers blooming earliest.  
**Deciduous.** Not persistent; not evergreen.  
**Definite.** Of a constant number, not exceeding twenty.  
**Dehiscent.** Opening regularly by valves, slits, etc., as a capsule or anther.  
**Deltoid.** Shaped like the Greek letter Δ.  
**Dentate.** Toothed, usually with the teeth directed outward.  
**Depressed.** Somewhat flattened from above.  
**Diadelphous (stamens).** Combined in two sets.  
**Diandrous.** Having two stamens.  
**Dicotyledonous.** Having two cotyledons.  
**Digitate.** Compound, with the members arising together at the apex of the support.  
**Dimorphous.** Occurring in two forms.  
**Diocious.** Unisexual, with the two kinds of flowers on separate plants.  
**Discoid.** Resembling a disk. Discoid head; in Composite, one without ray-flowers.  
**Disk.** A development of the receptacle at or around the base of the pistil. In Composite, the tubular flowers of the head as distinct from the ray.  
**Dorsal.** Upon or relating to the back or outer surface of an organ.

**Drupe.** A fleshy or pulpy fruit with the inner portion of the pericarp (one-celled and one-seeded, or sometimes several-celled) hard or stony.

**Emarginate.** Having a shallow notch at the extremity.

**Embryo.** The rudimentary plantlet within the seed.

**Endocarp.** The inner layer of a pericarp.

**Endodermis.** Innermost layer of cells of the cortex.

**Endogenous.** Growing throughout the substance of the stem, instead of by superficial layers.

**Entire.** Without toothing or division.

**Epicarp.** The outer layer of the pericarp or matured ovary.

**Epidermis.** The superficial layer of cells.

**Epiphyte.** A plant growing attached to another plant, but not parasitic; an air-plant.

**Exfoliating.** Cleaving off in thin layers.

**Exogenous.** Growing by annular layers near the surface; belonging to the Exogens.

**Exserted.** Projecting beyond an envelope, as stamens from a corolla.

**Farinaceous.** Containing starch; starch-like.

**Fascicle.** A close bundle or cluster.

**Fastigiate** (branches). Erect and near together.

**Fertile.** Capable of producing fruit; or productive, as a flower having a pistil, or an anther with pollen.

**Fibrous.** Composed of or resembling fibers. Fibrous Tissue, a tissue formed of elongated thick-walled cells.

**Fibro-vascular.** Composed of woody fibers and ducts.

**Filament.** The part of a stamen which supports the anther; any thread-like body.

**Filiform.** Thread-shaped; long, slender and terete.

**Flaccid.** Without rigidity; lax and weak.

**Floret.** A small flower, usually one of a dense cluster.

**Foliaceous.** Leaf-like in texture or appearance.

**Follicle.** A fruit consisting of a single carpel, dehiscing by the ventral suture.

**Free.** Not adnate to other organs.

**Fruit.** The seed-bearing product of a plant, simple, compound, or aggregated, of whatever form.

**Fugacious.** Falling or fading very early.

**Fusiform.** Spindle-shaped; swollen in the middle and narrowing toward each end.

**Galeate.** Helmet-shaped; having a galea.

**Gamopetalous.** Having the petals of the corolla more or less united.

**Gamosepalous.** Having the sepals united.

**Gibbous.** Protuberant or swollen on one side.

**Glabrous.** Smooth; not rough, pubescent, or hairy.

**Gland.** A secreting surface or structure; any protuberance or appendage having the appearance of such an organ.

**Glaucous.** Covered or whitened with a bloom.

**Gymnospermous.** Bearing naked seeds, without an ovary.

**Gynæcium.** Aggregate of pistils in a flower.

**Gynandrous.** Having the stamens borne upon the pistil, as in Orchidaceæ.

**Hastate.** Like an arrow-head, but with the basal lobes pointing outward nearly at right angles.

**Head.** A dense cluster of sessile or nearly sessile flowers on a very short axis or receptacle.

**Herb.** A plant with no persistent woody stem above ground.

**Hilum.** The scar or point of attachment of the seed.

**Hirsute.** Pubescent with rather coarse or stiff hairs.

**Hispid.** Beset with rigid or bristly hairs or with bristles.

**Hoary.** Grayish-white with a fine close pubescence.

**Hybrid.** A cross-breed of two species.

**Hypogynous.** Situated on the receptacle beneath the ovary and free from the calyx; having the petals and stamens so situated.

**Imbricate.** Overlapping, either vertically or spirally, where the lower piece covers the base of the next higher, or laterally, as in the aestivation of a calyx or corolla, where at least one piece must be wholly external and one internal.

**Impressed.** Bent inward, hollowed or furrowed as if by pressure.

*Incised.* Cut sharply and irregularly, more or less deeply.  
*Indehiscent.* Not opening by valves, etc.; remaining persistently closed.  
*Indigenous.* Native and original to the region.  
*Inferior.* Lower or below; outer or anterior. Inferior Ovary, one that is adnate to the calyx.  
*Inflorescence.* The flowering part of a plant, and especially the mode of its arrangement.  
*Inserted.* Attached to or growing out of.  
*Internode.* The portion of a stem between two nodes.  
*Introrse.* Turned inward or toward the axis.  
*Involute.* A circle or collection of bracts surrounding a flower cluster or head, or a single flower.  
*Involute.* Rolled inward.  
*Keel.* A central dorsal ridge, like the keel of a boat; the two anterior united petals of a papilionaceous flower.  
*Labiatae.* Lipped; belonging to the Labiateæ.  
*Laciniate.* Slashed; cut into narrow pointed lobes.  
*Lamella.* A thin flat plate or laterally flattened ridge.  
*Lanceolate.* Shaped like a lance-head, several times longer than wide, broadest above the base and narrowed to the apex.  
*Latex.* Milk; milky juice.  
*Leaflet.* A single division of a compound leaf.  
*Legume.* The fruit of the Leguminosæ, formed of a simple pistil and usually dehiscent by both sutures.  
*Lenticels.* Fissures in the cortex which permit easy access of air to the cells beneath.  
*Lenticular.* Lentil-shaped; of the shape of a double-convex lens.  
*Ligule.* A strap-shaped corolla, as in the ray-flowers of Compositeæ; a thin scarious projection from the summit of the sheath in Grasses.  
*Limb.* The expanded portion of a gamopetalous corolla above the throat; the expanded portion of any petal or a leaf.  
*Lip.* Each of the upper and lower divisions of a bilabiate corolla or calyx; the peculiar upper (but by a twist of the pedicel apparently lower) petal in Orchids.  
*Lobe.* Any segment of an organ, especially if rounded.  
*Loculicidal.* Dehiscent into the cavity of a cell through the dorsal suture.  
*Membranaceous, Membranous.* Thin, rather soft, and more or less translucent.  
*Mericarp.* One of the achene-like carpels of Umbelliferæ.  
*Micropyle.* The point upon the seed at which was the orifice of the ovule.  
*Microspore.* The smaller kind of spore in Selaginellaceæ, etc.  
*Midrib.* The central or main rib of a leaf.  
*Monadelphous* (stamens). United by their filaments into a tube or column.  
*Monocotyledonous.* Having but one cotyledon.  
*Mucronate.* Having the apex of the leaf like a continuation of the midrib.  
*Nerve.* A simple or unbranched vein or slender rib.  
*Node.* The place upon a stem which normally bears a leaf or whorl of leaves.  
*Nucleus.* The germ-cell of the ovule, which by fertilization becomes the seed; the kernel of a seed.  
*Nut.* A hard indehiscent 1-celled and 1-seeded fruit, though usually resulting from a compound ovary.  
*Obovate.* Inverted heart-shaped.  
*Oblanceolate.* Lanceolate with the broadest part toward the apex.  
*Obovoid.* Having the form of an inverted egg.  
*Opaque.* Dull; neither shining nor translucent.  
*Ovary.* The part of the pistil that contains the ovules.  
*Ovate.* Egg-shaped; having an outline like that of an egg, with the broader end downward.  
*Ovule.* The body which after fertilization becomes the seed.  
*Palmate* (leaf). Radiately lobed or divided.  
*Panicle.* A loose irregularly compound inflorescence with pedicellate flowers.  
*Papilionaceous* (corolla). Having a standard, wings, and keel, as in the peculiar corolla of many Leguminosæ.

**Pappus.** The modified calyx-limb in Compositæ, forming a crown of very various character at the summit of the achene.

**Parenchyma.** Soft tissue of cells with unthickened walls.

**Parietal.** Borne on or pertaining to the wall or inner surface of a capsule.

**Pedicel.** The support of a single flower.

**Peduncle.** A primary flower-stalk, supporting either a cluster or a solitary flower.

**Peltate.** Shield-shaped and attached to the support by the lower surface.

**Perennial.** Lasting year after year.

**Perfect (flower).** Having both pistil and stamens.

**Perianth.** The floral envelope, consisting of the calyx and corolla (when present), whatever their form.

**Pericarp.** The matured ovary.

**Periderm.** Outer layer of the bark or cortex.

**Petal.** A division of the corolla.

**Petiole.** The footstalk of a leaf.

**Phænogamous.** Having flowers with stamens and pistils and producing seeds.

**Phloem.** Cell layers between the cambium and cortex.

**Pilose.** Hairy, especially with soft hairs.

**Pinnate (leaf).** Compound, with the leaflets arranged on each side of a common petiole.

**Pistil.** The seed-bearing organ of the flower, consisting of the ovary, stigma, and style when present.

**Placenta.** Any part of the interior of the ovary which bears ovules.

**Plumose.** Having fine hairs on each side, like the plume of a feather, as the pappus-bristles of some Thistles.

**Plumule.** The bud or growing point of the embryo.

**Pod.** Any dry and dehiscent fruit.

**Pollen.** The fecundating grains contained in the anther.

**Pome.** A kind of fleshy fruit of which the apple is the type.

**Pubescent.** Covered with hairs, especially if short, soft and down-like.

**Punctate.** Dotted with depressions or with translucent internal glands or colored dots.

**Pungent.** Terminating in a rigid sharp point; acrid.

**Putamen.** The shell of a nut; the bony part of a stone-fruit.

**Raceme.** A simple inflorescence of pedicled flowers upon a common more or less elongated axis.

**Radiate.** Spreading from or arranged around a common center; bearing ray-flowers.

**Radicle.** The portion of the embryo below the cotyledons, more properly called the caudicle.

**Ray.** The branch of an umbel; the marginal flowers of an inflorescence when distinct from the disk.

**Receptacle.** The more or less expanded portion of an axis which bears the organs of a flower (the torus) or the collected flowers of a head; any similar structure in Cryptogams.

**Reniform.** Kidney-shaped: applied to leaves.

**Reticulate.** In the form of network; net-veined.

**Retorse.** Directed back or downward.

**Revolute.** Having both leaf margins inrolled lengthwise.

**Rhachis.** The axis of a spike or of a compound leaf.

**Rhaphe.** The ridge or adnate funicle which in an anatropous ovule connects the two ends.

**Rhizome.** Any prostrate or subterranean stem, usually rooting at the nodes and becoming erect at the apex.

**Root.** The underground part of a plant which supplies it with nourishment.

**Rootstock.** Same as Rhizome.

**Sagittate.** Shaped like an arrow-head, the basal lobes directed downward.

**Samara.** An indehiscent winged fruit.

**Scabrous.** Rough to the touch.

**Scape.** A peduncle rising from the ground, naked or without proper foliage.

**Sclerenchymatous.** Of sclerenchyma, that is, of tissue composed of cells with thickened and hardened walls.

**Seed.** The ripened ovule, consisting of the embryo and its proper coats.

**Sepal.** A division of a calyx.  
**Septicidal (capsule).** Dehiscent through the partitions and between the cells.  
**Serrate.** Having sharp teeth pointing forward.  
**Sessile.** Without footstalk of any kind.  
**Shrub.** A woody perennial, smaller than a tree, usually with several stems.  
**Silique.** The peculiar pod of Cruciferæ.  
**Spatulate.** Gradually narrowed downward from a rounded summit.  
**Spike.** A form of simple inflorescence with the flowers sessile or nearly so upon a more or less elongated common axis.  
**Spine.** A sharp woody or rigid outgrowth from the stem.  
**Spore.** The reproductive organ in Cryptogams, which in function corresponds to a seed but possesses no embryo.  
**Spur.** A hollow sac-like or tubular extension of some part of a blossom, usually nectariferous.  
**Stamen.** One of the pollen-bearing organs of the flower.  
**Stele.** Central cylinder (within the bark) of woody fiber.  
**Stellar, Stelliform.** Star-shaped.  
**Stem.** The main ascending axis of a plant.  
**Sterile.** Unproductive, as a flower without pistil, or a stamen without an anther.  
**Stigma.** That part of a pistil through which fertilization by the pollen is effected.  
**Stipe.** The stalk-like support of a pistil; the leaf-stalk of a fern.  
**Stipule.** An appendage at the base of a petiole or on each side of its insertion.  
**Stoma (pl. Stomata).** An orifice in the epidermis of a leaf communicating with internal air cavities.  
**Strigose.** Beset with appressed sharp straight and stiff hairs.  
**Strobile.** An inflorescence marked by imbricated bracts or scales, as in the Hop and Pine Cone.  
**Style.** The usually attenuated portion of the pistil connecting the stigma and ovary.  
**Symmetrical (flower).** Regular as to the number of its parts; having the same number of parts in each circle.  
**Testa.** The outer commonly hard and brittle seed-coat.  
**Tetradynamous.** Having four long and two shorter stamens.  
**Thallus.** In Cryptogams, a cellular expansion taking the place of stem and foliage.  
**Throat.** The orifice of a gamopetalous corolla or calyx; the part between the proper tube and the limb.  
**Torus.** The receptacle of a flower.  
**Truncate.** When the end of the leaf appears to be cut off.  
**Tuber.** A thickened and short subterranean branch having numerous buds or eyes.  
**Tubercle.** A small tuber or tuber-like (not necessarily subterranean) body.  
**Tuberous.** Having the character of a tuber; tuber-like in appearance.  
**Umbel.** An inflorescence in which the peduncles or pedicels of a cluster spring from the same point.  
**Unisexual.** Of one sex; either staminate or pistillate only.  
**Utricle.** A small bladdery 1-seeded fruit; any small bladder-like body.  
**Valve.** One of the pieces into which a capsule splits.  
**Veins.** Threads of fibro-vascular tissue in a leaf or other organ, especially those which branch (as distinguished from nerves).  
**Ventral.** Belonging to the anterior or inner face of an organ: the opposite of dorsal.  
**Vermiform.** Worm-shaped.  
**Vernation.** The arrangement of leaves in the bud.  
**Verticil.** A whorl.  
**Verticillate.** Disposed in a whorl.  
**Vesicle.** A small bladder or air-cavity.  
**Villous.** Bearing long and soft hairs.  
**Viscid.** Glutinous; sticky.  
**Whorl.** An arrangement of leaves, etc., in a circle round the stem.  
**Woolly.** Clothed with long and tortuous or matted hairs.

# **TABLE SHOWING THE LIMIT OF FOREIGN MATTER AND OF ASH SET BY THE U.S.P. OR N.F.; ALSO THE ASSAYS**

Compiled for the convenient use of examiners and analysts of drugs. Where no statements are made, the official standards do not give any data.

**ABSINTHIUM.**—Foreign matter 5 per cent.; ash 10 per cent.

**ACACIA.**—Ash 4 per cent.; 15 per cent. moisture in powder.

**ACONITUM.**—Foreign matter 5 per cent.; ash 6 per cent.; assay 0.5 per cent. ether-soluble alkaloids. Biological assay recommended.

**ADONIS.**—Foreign matter 5 per cent.; ash 12 per cent.

**AGARICUS.**—Foreign matter 10 per cent.; ash 2 per cent. White yields to boiling alcohol not less than 50 per cent. resinous extract.

**ALETRIS.**—Ash 16 per cent.

**ALOE.**—Ash 4 per cent.; moisture 10 per cent. Of Socotrine aloes not less than 50 per cent. is soluble in cold water; of Curaçao and Cape aloes not less than 60 per cent. is water-soluble.

**ALTHÆA.**—Ash 8 per cent.

**ALTHÆÆ FOLIA.**—Foreign matter 5 per cent.; ash 16 per cent.

**AMYGDALA DULCIS.**—Ash 4 per cent.

**ANGELICÆ FRUCTUS.**—Foreign matter 3 per cent.; ash 8 per cent.

**ANGELICÆ RADIX.**—Foreign matter 5 per cent.; ash 8 per cent.

**ANISUM.**—Foreign matter 3 per cent.; ash 9 per cent.

**APII FRUCTUS.**—Foreign matter 10 per cent.; ash 8 per cent.

**APOCYNUM.**—Foreign matter 5 per cent.; ash 5 per cent.

**ARALIA.**—Foreign matter 5 per cent.; ash 10 per cent.

**ASAFOETIDA.**—Ash 15 per cent.; ash from powder 30 per cent.; assay yields not less than 60 per cent. alcohol-soluble constituents, the powder yielding 50 per cent.

**ASARUM.**—Foreign matter 5 per cent.; ash 12 per cent.

**ASCLEPIAS.**—Foreign matter 5 per cent.; ash 9 per cent.

**ASPIDIUM.**—Ash 3 per cent.

**ASPIDOSPERMA.**—Foreign matter 2 per cent.

**AURANTII AMARI CORTEX.**—Ash 7 per cent.

**BALSAMUM PERUVIANUM.**—Acid number 56 to 84; saponification value 235 to 238; assay 56 to 58 per cent. cinnamein.

**BALSAMUM TOLUTANUM.**—Acid number 112 to 168; saponification value 154 to 220.

**BAPTISIA.**—Foreign matter 10 per cent.; ash 5 per cent.

**BELLADONNÆ FOLIA.**—Foreign matter 10 per cent.; ash 20 per cent.; assay 0.3 per cent. alkaloids.

**BELLADONNÆ RADIX.**—Foreign matter 10 per cent.; ash 7 per cent.; assay 0.45 per cent. alkaloids.

**BENZOINUM.**—Ash, Sumatra, 2.5 per cent.; Siam, 2 per cent.; assay 75 per cent. of Sumatra benzoin dissolves in alcohol and 90 per cent. of Siam benzoin is alcohol-soluble.

**BERBERIS.**—Foreign matter 5 per cent.; berberis without bark should be rejected; ash 5 per cent.

**BOLDO.**—Foreign matter 2 per cent.; ash 10 per cent.

**BRAYERA.**—Foreign matter 10 per cent.; ash 9 per cent.

**BRYONIA.**—Foreign matter 5 per cent.; ash 8 per cent.

**BUCHU.**—Foreign matter 10 per cent.; ash 4 per cent.

**CACAO PRÆPARATUM.**—Assay yields 14 to 22 per cent. extractive to cold water, not less than 18 per cent. fat to ether, and the fatty residue has no spicy odor or taste; crude fiber 6 per cent.; starch 12 per cent.; ash 3.5 to 8 per cent., reddish.

**CALENDULA.**—Foreign matter 2 per cent.; ash 11 per cent.

**CALUMBA.**—Ash 8 per cent.

**CAMBOGIA.**—Ash 2 per cent.; assay 65 per cent. soluble in alcohol.

**CAMPHORA.**—Ash 0.05 per cent.; dextrorotatory.

**CANELLA.**—Ash 7 per cent.

**CANNABIS.**—Ash 15 per cent.; assay 8 per cent.; bright green alcohol extractive. Biologically assayed on dogs.

**CANTHARIS.**—Ash 9 per cent.; assay 0.6 per cent. cantharidin; 10 per cent. moisture. Cantharides with ammoniacal odor must not be used.

**CAPSICUM.**—Foreign matter 2 per cent.; ash 7 per cent., the amount insoluble in hydrochloric acid not exceeding 1 per cent. of weight of capsicum taken; assay 15 per cent. non-volatile ether-soluble extractive.

**CARBO LIGNI.**—Ash 7.5 per cent.

**CARDAMOMI SEMEN.**—Ash 8 per cent.

**CARUM.**—Foreign matter 3 per cent.; ash 8 per cent.

**CARYOPHYLLUS.**—Foreign matter 5 per cent.; ash 8 per cent., the amount of which insoluble in hydrochloric acid does not exceed 0.5 per cent. weight of clove taken; assay 10 per cent. volatile extractive soluble in ether.

**CASCARILLA.**—Foreign matter 5 per cent.; ash 10 per cent.

**CASTANEA.**—Foreign matter 5 per cent.; ash 5 per cent.

**CATARIA.**—Ash 16 per cent.

**CAULOPHYLLUM.**—Ash 6 per cent.

**CENTAURIUM.**—Ash 5 per cent.

**CERA ALBA.**—Ester value 72 to 79.

**CERA FLAVA.**—Ester value 72 to 77.

**CHIMAPHILA.**—Foreign matter 5 per cent.; ash 7 per cent.

**CHIONANTHUS.**—Foreign matter 8 per cent.; ash 5 per cent.

**CHIRATA.**—Ash 6 per cent.

**CIMICIFUGA.**—Foreign matter 2 per cent.; ash 10 per cent.

**CINCHONA.**—Assay 5 per cent. alkaloids.

**CINCHONA RUBRA.**—Assay 5 per cent. alkaloids.

**CINNAMOMUM SAIGONICUM.**—Assay 2 per cent. volatile extractive soluble in ether; ash 6 per cent., amount insoluble in diluted hydrochloric acid not exceeding 2 per cent. of weight of drug taken.

**CINNAMOMUM ZEYLANICUM.**—Ash 6 per cent., amount insoluble in diluted hydrochloric acid not exceeding 2 per cent. of weight of drug taken; assay 0.5 per cent. volatile extractive soluble in ether.

**COCCULUS INDICUS.**—Ash 5 per cent.

**COCCUS.**—Ash 6 per cent.

**COCILLANA.**—Ash 10 per cent.

**COFFEA TOSTA.**—Ash 3 to 5 per cent.; assay 1 per cent. caffeine, 10 per cent. fat.

**COLCHICI CORMUS.**—Ash 6 per cent.; assay 0.35 per cent. colchicine.

**COLCHICI SEMEN.**—Ash 8 per cent.; assay 0.45 per cent. colchicine.

**COLOCYNTHIS.**—Foreign matter 5 per cent. seeds, 2 per cent. epicarp; ash 15 per cent.; assay 2 per cent. fixed oil on extraction with purified petroleum benzin.

**CONDURANGO.**—Ash 12 per cent.

**CONIUM.**—Ash 8 per cent.; assay 0.5 per cent. coniine.

**CONVALLARIA FLORES.**—Foreign matter 5 per cent.; ash 12 per cent.

**CONVALLARIA RADIX.**—Ash 10 per cent.

**COPAIBA.**—Resin 36 per cent.; acid value 28 to 95.

**COPTIS.**—Ash 8 per cent.

**CORIANDRUM.**—Foreign matter 5 per cent.; ash 7 per cent.; assay 0.5 per cent. volatile extractive soluble in ether.

**CORNUS.**—Ash 10 per cent.

**CORYDALIS.**—Foreign matter 5 per cent.; ash 8 per cent.

**CROCUS.**—Foreign matter 10 per cent.; ash 7.5 per cent. infusible; moisture 14 per cent.

**CUBEBA.**—Foreign matter 5 per cent.; ash 8 per cent.; assay 10 per cent. volatile extractive soluble in ether.

**CYPRIOPEDIUM.**—Foreign matter 5 per cent.; ash 12 per cent.

**DAMIANA.**—Foreign matter 10 per cent.; ash 10 per cent.

**DELPHINIUM.**—Foreign matter 5 per cent.; ash 5 per cent.

**DIASTASUM.**—Assay; converts 50 parts potato starch into sugar.

**DIGITALIS.**—Foreign matter 2 per cent.; ash 15 per cent.; biological assay recommended.

**DIOSCOREA.**—Ash 7 per cent.

**DROSEERA.**—Ash 30 per cent.

**DULCAMARA.**—Ash 6 per cent.

**ECHINACEA.**—Ash 6 per cent.

**ERGOTA.**—Foreign matter 5 per cent.; ash 5 per cent.

**ERIODICTYON.**—Foreign matter 5 per cent.

**EUCALYPTUS.**—Foreign matter 3 per cent.

**EUONYMUS.**—Foreign matter 3 per cent.; ash 12 per cent.

**EUPATORIUM.**—Ash 10 per cent.

**EUPHORBIA PILULIFERA.**—Ash 12 per cent.

**FARFARA.**—Foreign matter 5 per cent.; ash 20 per cent.

**FENICULUM.**—Foreign matter 4 per cent.; ash 9 per cent.

**FRANGULA.**—Ash 6 per cent.

**FRAXINUS.**—Ash 10 per cent.

**FUCUS.**—Ash 20 per cent.

**GALANGA.**—Ash 10 per cent.

**GALEGA.**—Ash 20 per cent.

**GALLA.**—Not more than 5 per cent. floats in water.

**GAMBIR.**—Ash 9 per cent.; assay 65 per cent. soluble in water, 60 per cent. alcohol-soluble.

**GELATINUM.**—Ash 2 per cent.

**GENTIANA.**—Ash 6 per cent.

**GERANIUM.**—Ash 8 per cent.

**GLYCYRRHIZA.**—Ash 7 per cent.

**GOSSYPII CORTEX.**—Foreign matter 5 per cent.; ash 7 per cent.

**GOSSYPIUM PURIFICATUM.**—Ash 0.2 per cent.

**GRINDELIA.**—Foreign matter 10 per cent.

**GUAIACI Lignum.**—Ash 3 per cent.; assay 15 per cent. extractive to alcohol.

**GUAIACUM.**—Ash 4 per cent.

**GUARANA.**—Assay 4 per cent. caffeine.

**GUTTA PERCHA.**—Ash 5 per cent.; 90 per cent. soluble in chloroform, carbon disulphide, petroleum benzin or oil turpentine.

**HÆMATOXYLON.**—Ash 3.5 per cent.

**HAMAMELIDIS FOLIA.**—Foreign matter 10 per cent.; ash 6 per cent.

**HELONIAS.**—Ash 5 per cent.

**HUMULUS.**—Foreign matter 2 per cent.; ash 8 per cent.

**HYDRANGEA.**—Ash 3 per cent.

**HYDRASTIS.**—Foreign matter 2 per cent.; assay 2.5 per cent. ether-soluble alkaloids.

**HYOSCYAMUS.**—Ash 30 per cent.; assay 0.065 per cent. alkaloids.

**IGNATIA.**—Ash 4 per cent.; assay 2 per cent. alkaloids.

**INULA.**—Foreign matter 5 per cent.; ash 10 per cent.

**IPECACUANHA.**—Foreign matter 5 per cent.; ash 1.8 to 4.5 per cent.; assay 1.75 per cent. ether-soluble alkaloids.

**IRIS.**—Ash 2 to 5 per cent.

**IRIS VERSICOLOR.**—Foreign matter 5 per cent.; ash 7 per cent.

**JALAPA.**—Ash 6.5 per cent.; assay 7 per cent. total resins.

**JUGLANS.**—Ash 8 per cent.

**JUNIPERUS.**—Ash 5 per cent.; reject old or insect-infected fruit.

**KAVA.**—Ash 8 per cent.

**KINO.**—Ash 3 per cent.; moisture 12 per cent.; assay 40 per cent. soluble in boiling water, 45 per cent. alcohol extractive.

**KOLA.**—Ash 3 per cent.; assay 1.5 per cent. caffeine.

**KRAMERIA.**—Foreign matter 5 per cent.; ash 5 per cent.; assay 9 per cent. aqueous extractive.

**LACTUCARIUM.**—Ash 10 per cent.; moisture 15 per cent.

**LAPPA.**—Ash 6 per cent.

**LEPTANDRA.**—Foreign matter 5 per cent.; ash 12 per cent.

**LINUM.**—Foreign matter 3 per cent.; ash 6 per cent.; assay petroleum benzin extracts 30 per cent. fixed oil, 98 per cent. saponifiable.

**LOBELIA.**—Foreign matter 10 per cent.; ash 8 per cent.

**LUPULIN.**—Ash 16 per cent.; assay 60 per cent. soluble in ether.

**LYCOPODIUM.**—Foreign matter 2 per cent.; ash 3 per cent.

**MACIS.**—Ash 3 per cent.; almost completely soluble in hydrochloric acid; assay 8 per cent. volatile ether extract, 20 to 30 per cent. non-volatile ether extract.

**MALTUM.**—Assay converts 5 times its weight of starch into sugar.

**MALVÆ FOLIA.**—Ash 16 per cent.

**MANNA.**—Acid number not less than 65; soluble completely in ether, almost entirely in alcohol.

**MATICO.**—Foreign matter 5 per cent.; ash 18 per cent.

**MEL.**—Ash 0.3 per cent.

**MELILOTUS.**—Ash 10 per cent.

**MENYANTHES.**—Ash 10 per cent.

**MOSCHUS.**—Ash 8 per cent.; moisture 15 per cent.; 50 per cent. soluble in water, 10 per cent. alcohol-soluble.

**MYRICA.**—Foreign matter 5 per cent.; ash 6 per cent.

**MYRISTICA.**—Ash 5 per cent.; reject broken or wormy kernels.

**MYRRHA.**—Ash 8.5 per cent.; 5 per cent. soluble in alcohol.

**NUX VOMICA.**—Ash 3.5 per cent.; assay 2.5 per cent. alkaloids.

**OPIUM.**—Assay in normal moist condition, 9.5 per cent. anhydrous morphine.

**OPIUM DEODORATUM, OPIUM GRANULATUM and OPII PULVIS.**—Assay 10 to 10.5 per cent. anhydrous morphine.

**PANCREATINUM.**—Assay; converts 25 parts starch into soluble carbohydrates.

**PAPAVERIS FRUCTUS.**—Ash 10 per cent.; remove and reject the seeds before using pharmaceutically.

**PARACOTO.**—Ash 3 per cent.

**PAREIRA.**—Foreign matter 5 per cent.; ash 5 per cent.

**PASSIFLORA.**—Ash 12 per cent.

**PEPO.**—Foreign matter 5 per cent.

**PEPSINUM.**—Assay; digests 3000 parts freshly coagulated and disintegrated egg albumin.

**PERSIO.**—Ash 35 per cent., mainly sodium chloride.

**PETROLATUM.**—Ash 0.05 per cent.

**PETROLATUM . LIQUIDUM.**—Light, viscosity not more than 3; heavy, viscosity not less than 3.1.

**PETROSELINI RADIX.**—Ash 6 per cent.

**PETROSELINUM.**—Foreign matter 5 per cent.

**PHYSOSTIGMA.**—Ash 3 per cent.; assay 0.15 per cent. alkaloids.

**PHYTOLACCA.**—Ash 14 per cent.

**PILOCARPUS.**—Foreign matter 5 per cent.; ash 7 per cent.; assay 0.6 per cent. alkaloids.

**PIMENTA.**—Foreign matter 5 per cent.; crude fiber 25 per cent.; ash 6 per cent.

**PIMPINELLA.**—Ash 5 per cent.

**PINUS ALBA.**—Ash 3 per cent.

**PIPER.**—Foreign matter 2 per cent.; ash 7 per cent., of which the amount insoluble in diluted hydrochloric acid does not exceed 2 per cent. of weight of pepper taken; assay 6 per cent. non-volatile extract soluble in ether; 25 per cent. starch.

**PIX LITHANTHRACIS.**—Ash 2 per cent.

**PODOPHYLLUM.**—Ash 3 per cent.; assay 3 per cent. resin.

**PULSATILLA.**—Foreign matter 5 per cent.; ash 10 per cent.

**PYRETHRUM.**—Ash 5 per cent.

**QUERCUS.**—Ash 7 per cent.

**QUILLAJA.**—Ash 10 per cent.

**RENNINUM.**—Assay; coagulates 25,000 parts fresh milk.

**RESINA.**—Ash 0.05 per cent.; acid number 150.

**RHAMNUS CATHARTICA.**—Foreign matter 5 per cent.; ash 5 per cent.

**RHEUM.**—Ash 13 per cent.; assay 30 per cent. dry extract when exhausted with diluted alcohol.

**RHUS GLABRA.**—Foreign matter 5 per cent.; ash 4 per cent.

**ROSA GALLICA.**—Ash 3.5 per cent.

**RUBUS.**—Ash 5 per cent.

**RUMEX.**—Foreign matter 5 per cent.; ash 10 per cent.

**SACCHARUM.**—Ash 0.05 per cent.

**SACCHARUM LACTIS.**—Ash 0.1 per cent.

**SAMBUCUS.**—Ash 8 per cent.

**SANTALUM ALBUM.**—Ash 8 per cent.

**SANTALUM RUBRUM.**—Ash 3 per cent.

**SARSAPARILLA.**—Ash 10 per cent.

**SASSAFRAS.**—Foreign matter 2 per cent.; ash 30 per cent.

**SCAMMONIÆ RADIX.**—Assay 8 per cent. resins.

**SCILLA.**—Ash 9 per cent.; assayed biologically.

**SCOPARIUS.**—Ash 5 per cent.

**SCUTELLARIA.**—Ash 12 per cent.

**SENECIO.**—Ash 10 per cent.

**SENEGA.**—Foreign matter 5 per cent.; ash 5 per cent.

**SENNA.**—Foreign matter 10 per cent.; ash 12 per cent., of which the amount insoluble in hydrochloric acid does not exceed 3 per cent. of drug taken.

**SERPENTARIA.**—Foreign matter 10 per cent.

**SEVUM PRÆPARATUM.**—Saponification value 193 to 200; iodine value 33 to 48.

**SINAPIS ALBA.**—Foreign matter 5 per cent.; ash 9 per cent.

**SINAPIS NIGRA.**—Foreign matter 5 per cent.; ash 9 per cent.

**SOLANUM.**—Ash 6 per cent.

**SPIGELIA.**—Foreign matter 10 per cent.; ash 10 per cent.

**STAPHISAGRIA.**—Foreign matter 2 per cent.

**STILLINGIA.**—Ash 5 per cent.

**STRAMONIUM.**—Foreign matter 10 per cent.; ash 20 per cent.; assay 0.25 per cent. alkaloids.

**STROPHANTHUS.**—Ash 5 per cent.; assayed biologically.

**STYRAX.**—Ash 1 per cent.; acid value 56 to 85; saponification value 170 to 230.

**SUCCUS CITRI.**—Assay 5 to 10 Gm. crystal citric acid in 100 mils.

**SUPRARENALUM SICCUM.**—Ash 7 per cent.; moisture 7 per cent.; assay 0.4 to 0.6 per cent. epinephrine.

**TARAXACUM.**—Ash 10 per cent.

**TEREBINTHINA LARICIS.**—Acid number 80.

**THUJA.**—Foreign matter 1 per cent.; ash 7 per cent.

**THYMUS.**—Ash 14 per cent.

**THYROIDEUM SICCUM.**—Assay 0.17 to 0.23 per cent. iodine; moisture 6 per cent.; ash 5 per cent.

**TRAGACANTHA.**—Ash 3.5 per cent.

**TRIFOLIUM.**—Ash 10 per cent.

**TRILLIUM.**—Ash 5 per cent.

**TRITICUM.**—Ash 3 per cent.

**UVA URSI.**—Foreign matter 5 per cent.

**VALERIANA.**—Ash 20 per cent.

**VANILLA.**—Ash 6 per cent.; assay yields 12 per cent. extractive to diluted alcohol.

**VERATRUM VIRIDE.**—Foreign matter 5 per cent.

**VERBASCI FLORES.**—Ash 6 per cent.

**VERBASCI FOLIA.**—Ash 14 per cent.

**VERBENA.**—Ash 10 per cent.

**VIBURNUM OPULUS.**—Foreign matter 5 per cent.

**VIBURNUM PRUNIFOLIUM.**—Foreign matter 5 per cent.

**XANTHOXYLI FRUCTUS.**—Ash 7 per cent.

**ZEDOARIA.**—Ash 7 per cent.

**ZINGIBER.**—Ash 8 per cent.; assay 2 per cent. non-volatile extract soluble in ether and 4 per cent. alcohol-soluble extract.

Jamaica Dogwood, 500 lbs. New burlap and new  $\frac{3}{4}$ -inch  
rope. Open on the broad sides of the bale. No other  
drug comes to market in this packing.

# DOSES of U. S. P. and N. F. Products

*Arranged from Lowest to Highest*

## ABBREVIATIONS:

Gm. = Gramme(s)   mil = milliliter (or Cc.)   1 Gm. = 15 grs.   1 mil = 15 min.  
gr. = grain(s)   min. = minim(s)   0.5 Gm. = 8 grs.   4 mils = 1 fl. dr.

## EQUIVALENTS:

0.008 mil (1/8 minim)	Fluidextractum Colchici Cormi, N.F.
Oleum Sinapis Volatile, U.S.P.	Fluidextractum Colchici Seminis, U.S.P.
0.03 mil (1/2 minim)	Fluidextractum Conii, N.F.
Benzaldehydum, U.S.P.	Fluidextractum Hyoscyami, U.S.P.
Fluidextractum Aconiti, U.S.P.	Liquor Acidi Arsenosi, U.S.P.
Fluidextractum Gelsemii, U.S.P.	Liquor Arsenicalis, Clemens, N.F.
Oleum Amygdalæ Amaræ, U.S.P.	Liquor Auri et Arseni Bromidi, N.F.
0.05 mil (1 minim)	Liquor Ferri Subsulphatis, U.S.P.
Cresol, U.S.P.	Liquor Hydrargyri et Potassii Iodidi, N.F.
Fluidextractum Belladonnæ Radicis, U.S.P.	Liquor Iodi Compositus, U.S.P.
Fluidextractum Digitalis, U.S.P.	Liquor Potassii Arsenitis, U.S.P.
Fluidextractum Ipecacuanhæ, U.S.P.	Liquor Sodii Arsenatis, U.S.P.
Fluidextractum Nucis Vomicæ, U.S.P.	Oleum Anisi, U.S.P.
Fluidextractum Stramonii, N.F.	Oleum Aurantii, U.S.P.
Oleum Phosphoratum, N.F.	Oleum Aurantii Amari, N.F.
Oleum Tiglii, U.S.P.	Oleum Cari, U.S.P.
Phenol Liquefactum, U.S.P.	Oleum Caryophylli, U.S.P.
Spiritus Glycerylis Nitratis, U.S.P.	Oleum Cassiæ, U.S.P.
0.1 mil (1 1/2 minims)	Oleum Chenopodii, U.S.P.
Acidum Hydrocyanicum Dilutum, U.S.P.	Oleum Coriandri, U.S.P.
Fluidextractum Arnicæ, N.F.	Oleum Fœniculi, U.S.P.
Fluidextractum Cannabis, U.S.P.	Oleum Juniperi, U.S.P.
Fluidextractum Sanguinariae, N.F.	Oleum Lavandulæ, U.S.P.
Fluidextractum Scillæ, U.S.P.	Oleum Limonis, U.S.P.
Fluidextractum Veratri Viridis, U.S.P.	Oleum Menthae Piperitæ, U.S.P.
Liquor Arseni et Hydrargyri Iodidi, U.S.P.	Oleum Menthae Viridis, U.S.P.
Liquor Ferri Chloridi, U.S.P.	Oleum Myristicæ, U.S.P.
Tinctura Cantharidis, U.S.P.	Oleum Picis Liquidæ Rectificatum, U.S.P.
Tinctura Iodi, U.S.P.	Oleum Pimentæ, U.S.P.
0.125 mil (2 minims)	Oleum Rosmarini, U.S.P.
Fluidextractum Adonidis, U.S.P.	Oleum Sassafras, U.S.P.
< 0.15 mil (2 1/2 minims)	Oleum Thymi, U.S.P.
Fluidextractum Lobeliæ, U.S.P.	0.25 mil (4 minims)
0.2 mil (3 minims)	Creosotum, U.S.P.
Acidum Nitrohydrochloricum, U.S.P.	Terebenum, U.S.P.
Amylis Nitris, U.S.P.	Tinctura Gelsemii, U.S.P.
Anethol, N.F.	0.3 mil (5 minims)
Bromoformum, U.S.P.	Acidum Formicum, N.F.
Eugenol, U.S.P.	Chloroformum, U.S.P.

Fluidextractum Paracoto, N.F.
Glyceritum Phenolis, U.S.P.
Liquor Ferri Acetatis, N.F.
Liquor Ferri Nitratis, N.F.

## DOSES—Part I. Liquids—continued

Mistura Opii et Sassafras, N.F.	Acidum Hydrochloricum Dilutum, U.S.P.
Oleum Terebinthinæ Rectificatum, U.S.P.	Acidum Nitrohydrochloricum Dilutum, U.S.P.
Tinctura Aconiti, U.S.P.	Acidum Sulphuricum Aromaticum, U.S.P.
0.35 mil (6 minimis)	Acidum Sulphuricum Dilutum, U.S.P.
Liquor Sodii Glycerophosphatis, U.S.P.	Æther, U.S.P.
0.5 mil (8 minimis)	Æther Aceticus, N.F.
Acetum Opii, N.F.	Aqua Ammoniæ, U.S.P.
Acidum Hydriodicum Dilutum, U.S.P.	Copaiba, U.S.P.
Acidum Hypophosphorosum Dilu- tum, U.S.P.	Elixir Anisi, N.F.
Fluidextractum Boldi, N.F.	Fluidextractum Aromaticum, U.S.P.
Fluidextractum Caulophylli, N.F.	Fluidextractum Aurantii Amari, U.S.P.
Fluidextractum Convallarizæ Florum, N.F.	Fluidextractum Baptisiae, N.F.
Fluidextractum Convallarizæ Radicis, N.F.	Fluidextractum Cascarae Sagradæ, U.S.P.
Fluidextractum Euonymi, N.F.	Fluidextractum Chiratae, N.F.
Fluidextractum Lupulini, N.F.	Fluidextractum Cimicifugæ, U.S.P.
Fluidextractum Podophylli, U.S.P.	Fluidextractum Cinchonæ, U.S.P.
Fluidextractum Quassiae, N.F.	Fluidextractum Cinchonæ Aquo- sum, N.F.
Guaiacol, U.S.P.	Fluidextractum Cocillanæ, N.F.
Mistura Carminativa, N.F.	Fluidextractum Cubebæ, N.F.
Oleoresina Petroselini, U.S.P.	Fluidextractum Cypripedii, N.F.
Oleum Cajuputi, U.S.P.	Fluidextractum Echinaceæ, N.F.
Oleum Cubebæ, U.S.P.	Fluidextractum Eriodictyi, U.S.P.
Oleum Eucalypti, U.S.P.	Fluidextractum Frangulæ, U.S.P.
Oleum Santali, U.S.P.	Fluidextractum Gentianæ, U.S.P.
Spiritus Amygdalæ Amaræ, U.S.P.	Fluidextractum Geranii, N.F.
Tinctura Capsici, U.S.P.	Fluidextractum Jalapæ, N.F.
Tinctura Digitalis, U.S.P.	Fluidextractum Kavæ, N.F.
Tinctura Ferri Chloridi, U.S.P.	Fluidextractum Kramerizæ, N.F.
Tinctura Ferri Citro-Chloridi, N.F.	Fluidextractum Leptandræ, N.F.
Tinctura Ipecacuanhæ et Opii, N.F.	Fluidextractum Phytolaccæ, N.F. Emetic, 1 mil (15 minimis); al- terative, 0.1 mil (1½ minimis)
Tinctura Nucis Vomicæ, U.S.P.	Fluidextractum Quercus, N.F.
Tinctura Opii, U.S.P.	Fluidextractum Rhamni Cathar- ticæ, N.F.
Tinctura Opii Deodorati, U.S.P.	Fluidextractum Rhei, U.S.P.
Tinctura Stramonii, U.S.P.	Fluidextractum Rhois Glabræ, N.F.
Tinctura Strophanthi, U.S.P.	Fluidextractum Rubi, N.F.
Tinctura Veratri Viridis, U.S.P.	Fluidextractum Sabal, U.S.P.
0.6 mil (10 minimis)	Fluidextractum Scoparii, N.F.
Fluidextractum Corydalis, N.F.	Fluidextractum Scutellarizæ, N.F.
Fluidextractum Fuci, N.F.	Fluidextractum Senegæ, U.S.P.
Liquor Ferri Citratis, N.F.	Fluidextractum Serpentariae, N.F.
Liquor Ferri Protochloridi, N.F.	Fluidextractum Verbæ, N.F.
Liquor Phosphori, N.F.	Fluidextractum Zingiberis, U.S.P.
Liquor Strychninæ Acetatis, N.F.	Fluidglyceratum Cascarae Sagradæ, N.F.
Tinctura Ignatiae, N.F.	Fluidglyceratum Cascarae Sagradæ Aromaticum, N.F.
Tinctura Opii Crocata, N.F.	Fluidglyceratum Kramerizæ, N.F.
Tinctura Passifloræ, N.F.	Fluidglyceratum Rhei, N.F.
Tinctura Pectoralis, N.F.	Liquor Ferri Hypophosphitis, N.F.
Vinum Colchici Cormi, N.F.	Liquor Hypophysis, U.S.P.
0.75 mil (12 minimis)	Liquor Potassii Citratis, U.S.P.
Fluidextractum Apocyni, N.F.	Liquor Potassii Hydroxidi, U.S.P.
Methylis Salicylas, U.S.P.	Liquor Sodii Hydroxidi, U.S.P.
Tinctura Belladonnæ Foliorum, U.S.P.	Spiritus Ammoniæ Anisatus, N.F.
Tinctura Cannabis, U.S.P.	Spiritus Camphoræ, U.S.P.
1 mil (15 minimis)	Syrupus Ferri et Mangani Iodidi, N.F.
Acetum Scillæ, U.S.P.	Syrupus Ferri Iodidi, U.S.P.
Acidum Hydrobromicum Dilutum, U.S.P.	

## DOSES—Part I. Liquids—continued

Tinctura Arnicæ, U.S.P.  
 Tinctura Asafœtidæ, U.S.P.  
 Tinctura Benzoini, U.S.P.  
 Tinctura Cacti Grandiflori, N.F.  
 Tinctura Lobeliæ, U.S.P.  
 Tinctura Myrrhæ, U.S.P.  
 Tinctura Physostigmatis, U.S.P.  
 Tinctura Sanguinaris, U.S.P.  
 Tinctura Scillæ, U.S.P.  
 Vinum Antimonii, N.F.  
 Vinum Ipecacuanhæ, N.F.

**2 mils (30 minimæ)**

Acidum Aceticum Dilutum, U.S.P.  
 Acidum Lacticum, U.S.P.  
 Acidum Phosphoricum Dilutum, U.S.P.  
 Emulsum Olei Terebinthinæ, U.S.P.  
 Fluidextractum Aletridis, N.F.  
 Fluidextractum Angelicæ Radicis, N.F.  
 Fluidextractum Apii Fructus, N.F.  
 Fluidextractum Araliæ, N.F.  
 Fluidextractum Asclepiadis, N.F.  
 Fluidextractum Berberidis, N.F.  
 Fluidextractum Buchu, U.S.P.  
 Fluidextractum Buchu Compositum, N.F.  
 Fluidextractum Calumbæ, N.F.  
 Fluidextractum Cascarae Sagradæ Aromaticum, U.S.P.  
 Fluidextractum Chimaphilæ, N.F.  
 Fluidextractum Chionanthi, N.F.  
 Fluidextractum Coffeæ, N.F.  
 Fluidextractum Coptis, N.F.  
 Fluidextractum Corni, N.F.  
 Fluidextractum Damianæ, N.F.  
 Fluidextractum Ergotæ, U.S.P.  
 Fluidextractum Eucalypti, U.S.P.  
 Fluidextractum Eupatorii, N.F.  
 Fluidextractum Euphorbiæ Piluliferae, N.F.  
 Fluidextractum Glycyrrhizæ, U.S.P.  
 Fluidextractum Gossypii Corticis, N.F.  
 Fluidextractum Granati, U.S.P.  
 Fluidextractum Grindelæ, U.S.P.  
 Fluidextractum Guaranæ, U.S.P.  
 Fluidextractum Hamamelidis Foliorum, N.F.  
 Fluidextractum Heloniatis, N.F.  
 Fluidextractum Humuli, N.F.  
 Fluidextractum Hydrangeæ, N.F.  
 Fluidextractum Hydrastis, U.S.P.  
 Fluidextractum Iridis Versicoloris, N.F.  
 Fluidextractum Lappæ, N.F.  
 Fluidextractum Pareiræ, N.F.  
 Fluidextractum Petroselini Radicis, N.F.  
 Fluidextractum Pilocarpi, U.S.P.  
 Fluidextractum Pruni Virginianæ, N.F.  
 Fluidextractum Rosæ, U.S.P.  
 Fluidextractum Sarsaparillæ, U.S.P.  
 Fluidextractum Sarsaparillæ Compositum, U.S.P.

Fluidextractum Sennæ, U.S.P.  
 Fluidextractum Stillingiæ, U.S.P.  
 Fluidextractum Stillingiæ Compositum, N.F.  
 Fluidextractum Sumbul, U.S.P.  
 Fluidextractum Thujae, N.F.  
 Fluidextractum Trillii, N.F.  
 Fluidextractum Uvæ Ursi, U.S.P.  
 Fluidextractum Valerianæ, N.F.  
 Fluidextractum Viburni Opuli, N.F.  
 Fluidextractum Viburni Prunifoliae, U.S.P.  
 Fluidextractum Xanthoxyli, U.S.P.  
 Fluidglyceratum Glycyrrhizæ, N.F.  
 Glyceritum Acidi Tannici, U.S.P.  
 Glyceritum Guaiaci, N.F.  
 Glyceritum Hydrastis, U.S.P.  
 Liquor Ferri Oxychloridi, N.F.  
 Liquor Sodii Arsenatis, Pearson, N.F.  
 Mistura Chloroformi et Morphinæ Composita, N.F.  
 Mistura Opii et Chloroformi Composita, N.F.  
 Mistura Opii et Rhei Composita, N.F.  
 Paraldehydum, U.S.P.  
 Spiritus Ætheris Nitrosi, U.S.P.  
 Spiritus Ammoniæ Aromaticus, U.S.P.  
 Spiritus Anisi, U.S.P.  
 Spiritus Chloroformi, U.S.P.  
 Spiritus Cinnamomi, U.S.P.  
 Spiritus Juniperi, U.S.P.  
 Spiritus Lavandulæ, U.S.P.  
 Spiritus Menthae Piperitæ, U.S.P.  
 Spiritus Menthae Viridis, U.S.P.  
 Syrupus Calcii Iodidi, N.F.  
 Syrupus Pini Strobi Compositus cum Morphina, N.F.  
 Syrupus Sanguinaris, N.F.  
 Syrupus Scillæ, U.S.P.  
 Syrupus Scillæ Compositus, U.S.P.  
 Tinctura Aloes, U.S.P.  
 Tinctura Aloes et Myrrhæ, N.F.  
 Tinctura Amara, N.F.  
 Tinctura Aromatica, N.F.  
 Tinctura Benzoini Composita, U.S.P.  
 Tinctura Capsici et Myrrhæ, N.F.  
 Tinctura Cardamomi, U.S.P.  
 Tinctura Cinnamomi, U.S.P.  
 Tinctura Colchici Seminis, U.S.P.  
 Tinctura Ferri Chloridi Ætherea, N.F.  
 Tinctura Guaiaci Ammoniata, U.S.P.  
 Tinctura Hyoscyami, U.S.P.  
 Tinctura Lactucarii, U.S.P.  
 Tinctura Lavandulæ Composita, U.S.P.  
 Tinctura Paracoto, N.F.  
 Tinctura Pulsatillæ, N.F.  
 Tinctura Quassiae, U.S.P.  
 Tinctura Rhei Aromatica, U.S.P.  
 Tinctura Rhei Dulcis, N.F.  
 Tinctura Tolutana, U.S.P.

## DOSES—Part I. Liquids—continued

Tinctura Valerianæ Ammoniata, U.S.P.	Fluidextractum Castaneæ, N.F.
Tinctura Zingiberis, U.S.P.	Fluidextractum Catariæ, N.F.
Vinum Colchici Seminis, N.F.	Fluidextractum Condurango, N.F.
<b>3 mils (45 minims)</b>	Fluidextractum Dioscoreæ, N.F.
Glyceritum Pepsini, N.F.	Fluidextractum Droseræ, N.F.
<b>4 mils (1 fl. dr.)</b>	Fluidextractum Dulcamaræ, N.F.
Aqua Amygdalæ Amaræ, U.S.P.	Fluidextractum Galegæ, N.F.
Elixir Ammonii Bromidi, N.F.	Fluidextractum Helianthemi, N.F.
Elixir Ammonii Valeratis, N.F.	Fluidextractum Juglandis, N.F.
Elixir Bismuthi, N.F.	Fluidextractum Juniperi, N.F.
Elixir Buchu, N.F.	Fluidextractum Kolæ, N.F.
Elixir Buchu Compositum, N.F.	Fluidextractum Matico, N.F.
Elixir Buchu et Potassii Acetatis, N.F.	Fluidextractum Ramicis, N.F.
Elixir Calcii Bromidi, N.F.	Fluidextractum Senecionis, N.F.
Elixir Calcii et Sodii Glycerophos- phatum, N.F.	Fluidextractum Solani, N.F.
Elixir Cascaræ Sagradæ, N.F.	Fluidextractum Spigeliæ, U.S.P.
Elixir Cascaræ Sagradæ Compositum, N.F.	Fluidextractum Thymi, N.F.
Elixir Cinchonæ Alkaloidorum, Ferri, Bismuthi et Strychninæ, N.F.	Fluidextractum Trifolii, N.F.
Elixir Cinchonæ Alkaloidorum, Ferri et Strychninæ, N.F.	Fluidextractum Verbasci Foliorum, N.F.
Elixir Corydalis Compositum, N.F.	Fluidextractum Zeæ, N.F.
Elixir Eriodictyi Aromaticum, N.F.	Glycerinum, U.S.P.
Elixir Ferri Hypophosphitis, N.F.	Glyceritum Picis Liquidæ, N.F.
Elixir Ferri Lactatis, N.F.	Infusum Digitalis, U.S.P.
Elixir Ferri Phosphatis, N.F.	Liquor Ammonii Citratis, N.F.
Elixir Ferri Pyrophosphatis, N.F.	Liquor Antisepticus, N.F.
Elixir Ferri Pyrophosphatis, Quininæ et Strychninæ, N.F.	Liquor Bismuthi, N.F.
Elixir Ferri, Quininæ et Strychninæ, N.F.	Liquor Chlori Compositus, N.F.
Elixir Gentianæ, N.F.	Liquor Hydrastinæ Compositus, N.F.
Elixir Gentianæ et Ferri, N.F.	Liquor Hydrogenii Dioxide, U.S.P.
Elixir Gentianæ et Ferri Phosphatis, N.F.	Liquor Hypophosphitum, N.F.
Elixir Guaranae, N.F.	Liquor Hypophosphitum Compositus, N.F.
Elixir Pepsini, Bismuthi et Strychninæ, N.F.	Liquor Pancreatini, N.F.
Elixir Phosphori, N.F.	Liquor Phosphatum Acidus, N.F.
Elixir Phosphori et Nucis Vomicæ, N.F.	Magma Bismuthi, U.S.P.
Elixir Quininæ Valeratis et Strychninæ, N.F.	Mel Rosæ, U.S.P.
Elixir Sodii Hypophosphitis, N.F.	Mistura Chloralis et Potassii Bromidi Composita, N.F.
Elixir Sodii Salicylatis, N.F.	Mistura Copaibæ et Opii, N.F.
Elixir Sodii Salicylatis Compositum, N.F.	Mistura Pectoralis, Stokes, N.F.
Elixir Strychninæ Valeratis, N.F.	Mistura Rhei Alkalina, N.F.
Elixir Terpini Hydratis, N.F.	Mistura Rhei Composita, N.F.
Elixir Terpini Hydratis et Codeinæ, N.F.	Oxymel Scillæ, N.F.
Elixir Terpini Hydratis et Diacetylmorphinæ, N.F.	Spiritus Acidi Formici, N.F.
Elixir Trium Bromidorum, N.F.	Spiritus Ætheris, U.S.P.
Elixir Viburni Opuli Compositum, N.F.	Spiritus Ætheris Compositus, N.F.
Elixir Viburni Prunifolii, N.F.	Syrupus Acidi Hydriodici, U.S.P.
Elixir Zincii Valeratis, N.F.	Syrupus Allii, N.F.
Fluidextractum Aspidospermatis, U.S.P.	Syrupus Althææ, N.F.
	Syrupus Ammonii Hypophosphitis, N.F.
	Syrupus Asari Compositus, N.F.
	Syrupus Bromidorum, N.F.
	Syrupus Calcii et Sodii Hypo- phosphitum, N.F.
	Syrupus Calcii Hydrochloro- phosphatis, N.F.
	Syrupus Calcii Hypophosphitis, N.F.
	Syrupus Calcii Lactophosphatis et Ferri, N.F.
	Syrupus Cimicifugæ Compositus, N.F.
	Syrupus Cinnamomi, N.F.
	Syrupus Codeinæ, N.F.

## DOSES—Part I. Liquids—continued

**Syrupus Ferri Hypophosphitis, N.F.**

**Syrupus Ferri Lactophosphatis, N.F.**

**Syrupus Ferri Protochloridi, N.F.**

**Syrupus Ferri, Quininæ et Strychninæ Phosphatum, N.F.**

**Syrupus Ferri Saccharati Solubilis, N.F.**

**Syrupus Ficorum Compositus, N.F.**

**Syrupus Iodotannicus, N.F.**

**Syrupus Ipecacuanhæ et Opii, N.F.**

**Syrupus Krameriæ, N.F.**

**Syrupus Morphinæ et Acaciæ, N.F.**

**Syrupus Papaveris, N.F.**

**Syrupus Phosphatum Compositus, N.F.**

**Syrupus Phosphatum cum Quinina et Strychnina, N.F.**

**Syrupus Picis Liquidæ, U.S.P.**

**Syrupus Pini Strobi Compositus, N.F.**

**Syrupus Pruni Virginianæ, U.S.P.**

**Syrupus Quinidinæ, N.F.**

**Syrupus Rubi, N.F.**

**Syrupus Senegæ, U.S.P.**

**Syrupus Sennæ, U.S.P.**

**Syrupus Sodii Hypophosphitis, N.F.**

**Syrupus Stillingiæ Compositus, N.F.**

**Tinctura Antiperiodica, N.F.**

**Tinctura Antiperiodica sine Aloe, N.F.**

**Tinctura Aurantii Amari, U.S.P.**

**Tinctura Aurantii Dulcis, U.S.P.**

**Tinctura Bryoniæ, N.F.**

**Tinctura Calumbæ, U.S.P.**

**Tinctura Cardamomi Composita, U.S.P.**

**Tinctura Cimicifugæ, N.F.**

**Tinctura Cinchonæ, U.S.P.**

**Tinctura Cinchonæ Composita, U.S.P.**

**Tinctura Cubebæ, N.F.**

**Tinctura Ergotæ Ammoniata, N.F.**

**Tinctura Ferri Pomata, N.F.**

**Tinctura Gallæ, N.F.**

**Tinctura Gambir Composita, U.S.P.**

**Tinctura Gentianæ Composita, U.S.P.**

**Tinctura Guaiaci, U.S.P.**

**Tinctura Guaiaci Composita, N.F.**

**Tinctura Humuli, N.F.**

**Tinctura Hydrastis, U.S.P.**

**Tinctura Jalapæ, N.F.**

**Tinctura Jalapæ Composita, N.F.**

**Tinctura Kino, U.S.P.**

**Tinctura Kino et Opii Composita, N.F.**

**Tinctura Krameriæ, N.F.**

**Tinctura Moschi, U.S.P.**

**Tinctura Opii Camphorata, U.S.P.**

**Tinctura Pimpinellæ, N.F.**

**Tinctura Rhei, U.S.P.**

**Tinctura Rhei Aquosa, N.F.**

**Tinctura Rhei et Gentianæ, N.F.**

**Tinctura Sabal et Santali, N.F.**

**Tinctura Serpentariæ, N.F.**

**Tinctura Sumbul, N.F.**

**Tinctura Valerianæ, N.F.**

**Tinctura Viburni Opuli Composita, N.F.**

**Tinctura Zedoariæ Amara, N.F.**

**Vinum Aurantii Compositum, N.F.**

**Vinum Fraxini, N.F.**

**Vinum Pruni Virginianæ, N.F.**

**Vinum Pruni Virginianæ Ferratum, N.F.**

**Vinum Rhei Compositum, N.F.**

**8 mils (2 fl. drs.)**

**Cordiale Rubi Fructus, N.F.**

**Elixir Calcii Hypophosphitis, N.F.**

**Elixir Calcii Lactophosphatis, N.F.**

**Elixir Cinchonæ Alkaloidorum, N.F.**

**Elixir Cinchonæ Alkaloidorum et Ferri, N.F.**

**Elixir Cinchonæ Alkaloidorum et Hypophosphitum, N.F.**

**Elixir Cinchonæ Alkaloidorum, Ferri et Bismuthi, N.F.**

**Elixir Cinchonæ Alkaloidorum Ferri et Calcii Lactophosphatis, N.F.**

**Elixir Cinchonæ Alkaloidorum, Ferri et Pepsini, N.F.**

**Elixir Formatum, N.F.**

**Elixir Formatum Compositum, N.F.**

**Elixir Gentianæ Glycerinatum, N.F.**

**Elixir Glycerophosphatum Compositum, N.F.**

**Elixir Glycyrrhizæ Aquosum, N.F.**

**Elixir Glycyrrhizæ Aromaticum, N.F.**

**Elixir Humuli, N.F.**

**Elixir Hypophosphitum, N.F.**

**Elixir Hypophosphitum et Ferri, N.F.**

**Elixir Lithii Bromidi, N.F.**

**Elixir Lithii Citratis, N.F.**

**Elixir Lithii Salicylatis, N.F.**

**Elixir Pepsini, N.F.**

**Elixir Pepsini et Bismuthi, N.F.**

**Elixir Pepsini et Ferri, N.F.**

**Elixir Pepsini et Rennini Compositum, N.F.**

**Elixir Potassii Bromidi, N.F.**

**Elixir Sodii Bromidi, N.F.**

**Elixir Taraxaci Compositum, N.F.**

**Emulsum Olei Morrhuæ cum Hypophosphitibus, N.F.**

**Liquor Ferri Albuminati, N.F.**

**Liquor Ferri Peptonati, N.F.**

**Liquor Ferri Peptonati et Mangani, N.F.**

**Liquor Ferri Salicylatis, N.F.**

**Liquor Pepsini, N.F.**

**Liquor Pepsini Aromaticus, N.F.**

**Liquor Sodæ et Menthae, N.F.**

**Liquor Sodii Citratis, N.F.**

**Liquor Sodii Phosphatis Compositus, N.F.**

## DOSES—Part I.

Mistura Ammonii Chloridi, N.F.  
Mistura Camphoræ Acida, N.F.  
Mistura Camphoræ Aromaticæ,  
N.F.  
Mistura Copaiæ, N.F.  
Mistura Magnesiae, Asafoetidæ et  
Opii, N.F.  
Mistura Olei Picis, N.F.  
Succus Citri et Pepsinum, N.F.  
Syrupus Eriodictyi Aromaticus,  
N.F.  
Syrupus Glycyrrhizæ, N.F.  
Syrupus Hypophosphitum  
Compositus, N.F.  
Syrupus Mannæ, N.F.  
Syrupus Rhamni Catharticæ, N.F.  
Syrupus Sennæ Aromaticus, N.F.  
Syrupus Sennæ Compositus, N.F.  
Vinum Carnis, N.F.  
Vinum Carnis et Ferri, N.F.  
Vinum Ferri, N.F.  
Vinum Ferri Amarum, N.F.  
Vinum Pepsini, N.F.  
Vinum Picis, N.F.

### 10 mils (2½ fl. drs.)

Aqua Camphoræ, U.S.P.  
Aqua Creosoti, U.S.P.  
Fluidextractum Taraxaci, U.S.P.  
Fluidextractum Tritici, U.S.P.  
Magma Magnesiae, U.S.P.  
Mistura Glycyrrhizæ Composita,  
U.S.P.  
Oleum Morrhuæ, U.S.P.  
Spiritus Juniperi Compositus,  
U.S.P.  
Syrupus Calcii Lactophosphatis,  
U.S.P.  
Syrupus Hypophosphitum, U.S.P.  
Syrupus Lactucarii, U.S.P.  
Syrupus Rhei, U.S.P.  
Syrupus Rhei Aromaticus, U.S.P.

### 12 mils (3 fl. drs.)

Elixir Catharticum Compositum,  
N.F.

### 15 mils (4 fl. drs.)

Aqua Anisi, U.S.P.  
Aqua Chlороformi, U.S.P.  
Aqua Cinnamomi, U.S.P.  
Aqua Foeniculi, U.S.P.  
Aqua Menthae Piperitæ, U.S.P.  
Aqua Menthae Viridis, U.S.P.  
Elixir Potassii Acetatis, N.F.  
Elixir Potassii Acetatis et  
Juniperi, N.F.  
Elixir Rubi Compositum, N.F.  
Emulsum Asafoetidæ, U.S.P.  
Emulsum Olei Morrhuæ, U.S.P.  
Emulsum Olei Morrhuæ cum  
Calcii Lactophosphate, N.F.  
Emulsum Olei Morrhuæ cum  
Calcii Phosphate, N.F.  
Emulsum Olei Morrhuæ cum  
Malto, N.F.

## Liquids—continued

Emulsum Olei Morrhuæ cum  
Pruno Virginiana, N.F.  
Emulsum Olei Morrhuæ cum  
Vitello, N.F.  
Emulsum Petrolati, N.F.  
Infusum Gentianæ Compositum,  
N.F.  
Liquor Ammonii Acetatis, U.S.P.  
Liquor Calcis, U.S.P.  
Liquor Ferri et Ammonii Acetatis,  
U.S.P.  
Mistura Cretæ, U.S.P.  
Mistura Ferri Composita, N.F.  
Mistura Guaiaci, N.F.  
Mucilago Acaciæ, U.S.P.  
Mucilago Sassafras Medullæ, N.F.  
Oleum Ricini, U.S.P.  
Oleum Ricini Aromaticum, N.F.  
Petrolatum Liquidum, U.S.P.  
Syrupus Ipecacuanhæ, U.S.P.  
Syrupus Sarsaparillæ Compositus,  
U.S.P.  
Syrupus Tolutanus, U.S.P.  
Syrupus Zingiberis, U.S.P.

### 30 mils (1 fl. oz.)

Oleum Lini, U.S.P.  
Oleum Olivæ, U.S.P.

### 45 mils (1½ fl. ozs.)

Emulsum Olei Ricini, N.F.

### 50 mils (12 fl. drs.)

Infusum Cinchonæ, N.F.

### 60 mils (2 fl. ozs.)

Infusum Pruni Virginianæ, N.F.

### 100 mils (3 fl. ozs.)

Infusum Rosæ Compositum, N.F.

### 120 mils (4 fl. ozs.)

Decoctum Sarsaparillæ  
Compositum, N.F.  
Ferri Hydroxidum cum Magnesii  
Oxido, U.S.P. (arsenic antidote)  
Infusum Sennæ Compositum,  
U.S.P.

### 250 mils (8 fl. ozs.)

Infusum Brayeræ, N.F.  
Lac Fermentatum, N.F.

### 360 mils (12 fl. ozs.)

Liquor Magnesii Citratis, U.S.P.  
Liquor Magnesii Sulphatis  
Effervescent, N.F.

### 1 bottle

Liquor Sodii Citro-Tartratis  
Effervescent, N.F.

**DOSES—Part I. Liquids—concluded, Part II. Solids**

<b>Hypoderm.</b> —10000 units	<b>Hypoderm.</b> —10000 units
<b>Protective</b> —1000 units	<b>Protective</b> —1500 units
Serum Antidiphthericum, U.S.P.	Serum Antitetanicum, U.S.P.
Serum Antidiphthericum Purificatum, U.S.P.	Serum Antitetanicum Purificatum, U.S.P.
Serum Antidiphthericum Siccum, U.S.P.	Serum Antitetanicum Siccum, U.S.P.

**Part II—Solids**

<b>0.00015 Gm. (0.15 milligramme)</b>	<b>0.005 Gm. (<math>\frac{1}{12}</math> gr.)</b>
( $\frac{1}{400}$ gr.)	Antimonii et Potassii Tartras, U.S.P.
Aconitina, U.S.P.	Arseni Iodidum, U.S.P.
<b>0.0003 Gm. (<math>\frac{1}{200}</math> gr.)</b>	Auri et Sodii Chloridum, U.S.P.
Hyoscyaminæ Hydrobromidum, U.S.P.	Iodium, U.S.P.
Scopolaminæ Hydrobromidum, U.S.P.	Pilocarpinæ Hydrochloridum, U.S.P. (hypoderm.) ; mouth, 0.01 Gm. ( $\frac{1}{6}$ gr.)
<b>0.0005 Gm. (<math>\frac{1}{120}</math> gr.)</b>	Pilocarpinæ Nitras, U.S.P. Same as preceding
Atropina, U.S.P.	Sodii Arsenas, U.S.P.
Atropinæ Sulphas, U.S.P.	<b>0.006 Gm. (<math>\frac{1}{10}</math> gr.)</b>
Colchicina, U.S.P.	Acidum Bromauricum, N.F.
Homatropinæ Hydrobromidum, U.S.P.	<b>0.008 Gm. (<math>\frac{1}{8}</math> gr.)</b>
Phosphorus, U.S.P.	Extractum Physostigmatis, U.S.P.
<b>0.00075 Gm. (<math>\frac{1}{80}</math> gr.)</b>	Morphina, U.S.P.
Strophanthinum, U.S.P. (intravenous) ; mouth, 0.001 Gm. ( $\frac{1}{60}$ gr.)	Morphinæ Hydrochloridum, U.S.P.
<b>0.001 Gm. (<math>\frac{1}{60}</math> gr.)</b>	Morphinæ Sulphas, U.S.P.
Physostigminæ Salicylas, U.S.P.	<b>0.01 Gm. (<math>\frac{1}{6}</math> gr.)</b>
<b>0.0015 Gm. (<math>\frac{1}{40}</math> gr.)</b>	Argenti Nitras, U.S.P.
Strychnina, U.S.P.	Extractum Aconiti, U.S.P.
Strychninæ Glycerophosphas, N.F.	Extractum Cannabis, U.S.P.
Strychninæ Nitras, U.S.P.	Extractum Gelsemii, U.S.P.
Strychninæ Sulphas, U.S.P.	Extractum Stramonii, U.S.P.
Strychninæ Valeras, N.F.	Hydrargyri Iodidum Flavum, U.S.P.
<b>0.002 Gm. (<math>\frac{1}{30}</math> gr.)</b>	Hydrastina, U.S.P.
Arseni Trioxidum, U.S.P.	Hydrastinæ Hydrochloridum, U.S.P.
<b>0.003 Gm. (<math>\frac{1}{20}</math> gr.)</b>	Resina Podophylli, U.S.P.
Apomorphinæ Hydrochloridum, U.S.P. expectorant; emetic, mouth, 0.01 Gm. ( $\frac{1}{6}$ gr.) ; emetic, hypodermic, 0.005 Gm. ( $\frac{1}{12}$ gr.)	Sparteinæ Sulphas, U.S.P.
Diacetylmorphina, U.S.P.	Uranii Nitras, U.S.P. (with caution)
Diacetylmorphinæ Hydrochloridum, U.S.P.	<b>0.015 Gm. (<math>\frac{1}{4}</math> gr.)</b>
Elaterinum, U.S.P.	Æthylmorphinæ Hydrochloridum, U.S.P.
Hydrargyri Chloridum Corrosivum, U.S.P.	Aloinum, U.S.P.
Hydrargyri Iodidum Rubrum, U.S.P.	Cocaina, U.S.P.
Sodii Arsenas Exsiccatus, U.S.P.	Cocainæ Hydrochloridum, U.S.P.
<b>0.004 Gm. (<math>\frac{1}{15}</math> gr.)</b>	Extractum Belladonnæ Foliorum, U.S.P.
Hydrargyri Salicylas, U.S.P.	Extractum Nucis Vomicæ, U.S.P.
	Extractum Podophylli, N.F.
	Hydrargyri Chloridum Mite, U.S.P.
	<b>0.02 Gm. (<math>\frac{1}{3}</math> gr.)—hypoderm.</b>
	Emetinæ Hydrochloridum, U.S.P.

## DOSES—Part II.

### 0.03 Gm. (1/2 gr.)

- Aconitum, U.S.P.
- Chrysarobinum, U.S.P.
- Codeina, U.S.P.
- Codeinæ Phosphas, U.S.P.
- Codeinæ Sulphas, U.S.P.
- Extractum Colocynthidis, U.S.P.
- Extractum Conii, N.F.
- Extractum Ignatiae, N.F.
- Extractum Opii, U.S.P.
- Gelsemium, U.S.P.
- Hydrastininæ Hydrochloridum, U.S.P.
- Hypophysis Sicca, U.S.P.
- Oleoresina Capsici, U.S.P.
- Oleoresina Piperis, U.S.P.
- Oleoresina Zingiberis, U.S.P.
- Trinitrophenol, U.S.P.
- Trituratio Elaterini, U.S.P.
- Vanillinum, U.S.P.

### 0.045 Gm. (3/4 gr.)

- Belladonnæ Radix, U.S.P.

### 0.06 Gm. (1 gr.)

- Antimonii Oxidum, N.F.
- Argenti Oxidum, U.S.P.
- Belladonnæ Folia, U.S.P.
- Calcium Sulphidum Crudum, U.S.P.
- Capsicum, U.S.P.
- Colocynthis, U.S.P.
- Cotarninæ Hydrochloridum, U.S.P.
- Digitalis, U.S.P.
- Extractum Colchici Cormi, U.S.P.
- Extractum Hyoscyami, U.S.P.
- Extractum Quassiae, N.F.
- Ferri Chloridum, U.S.P.
- Ferri Sulphas Exsiccatus, U.S.P.
- Ferrum Reductum, U.S.P.
- Ignatia, N.F.
- Menthol, U.S.P.
- Nux Vomica, U.S.P.
- Opii Pulvis, U.S.P.
- Opium, U.S.P.
- Opium Deodoratum, U.S.P.
- Opium Granulatum, U.S.P.
- Phenol, U.S.P.
- Plumbi Acetas, U.S.P.
- Potassii Permanganas, U.S.P.
- Santoninum, U.S.P.
- Sodii Cacodylas, U.S.P.
- Sodii Nitris, U.S.P.
- Sodii Perboras, U.S.P.
- Staphisagria, U.S.P.
- Stramonium, U.S.P.
- Strophanthus, U.S.P.
- Veratrum Viride, U.S.P.

### 0.1 Gm. (1 1/2 grs.)

- Extractum Fellis Bovis, U.S.P.
- Ferri Sulphas, U.S.P.
- Ferri Sulphas Granulatus, U.S.P.
- Physostigma, U.S.P.
- Quinidina, N.F.
- Quinina, U.S.P.
- Quininæ Bisulphas, U.S.P.
- Quininæ Dihydrochloridum, U.S.P.

## Solids—continued

- Quininæ Glycerophosphas, N.F.
- Quininæ Hydrobromidum, U.S.P.
- Quininæ Hydrochloridum, U.S.P.
- Quininæ Hypophosphis, N.F.
- Quininæ Salicylas, U.S.P.
- Quininæ Sulphas, U.S.P.
- Quininæ Valeras, N.F.
- [The Tonic Dose for Quinidina and Quinina Salts is as above given. The Anti-malarial Dose is 1 Gm. (15 grs.) daily.]
- Scilla, U.S.P.
- Thyroideum Siccum, U.S.P.

### 0.125 Gm. (2 grs.)

- Adonis, N.F.
- Bismuthi et Ammonii Citras, U.S.P.
- Cambogia, U.S.P.
- Camphora Monobromata, U.S.P.
- Extractum Aloes, N.F.
- Extractum Euonymi, N.F.
- Resina Jalapæ, U.S.P.
- Resorcinol, U.S.P.
- Sanguinaria, U.S.P.
- Zinci Acetas, U.S.P.
- Zinci Phenolsulphonas, U.S.P.
- Zinci Valeras, U.S.P.

### 0.15 Gm. (2 1/2 grs.)

- Caffeina, U.S.P.
- Cinchonidinæ Sulphas, U.S.P.
- Cinchoninæ Sulphas, U.S.P.
- Lobelia, U.S.P.
- Methylthioninæ Chloridum, U.S.P.
- Phenolphthaleinum, U.S.P.

### 0.2 Gm. (3 grs.)

- Acetanilidum, U.S.P.
- Ammonii Hypophosphis, N.F.
- Benzosulphinidum, U.S.P.
- Caffeinæ Sodio-Benzoas, U.S.P. (hypoderm.) ; mouth, 0.3 Gm. (5 grs.)
- Caffeinæ Sodio-Salicylas, N.F.
- Camphora, U.S.P. mouth; hypodermic, 0.1 Gm. (1 1/2 grs.)
- Cerii Oxalas, U.S.P.
- Colchici Semen, U.S.P.
- Conium, N.F.
- Extractum Ergotæ Aquosum, N.F.
- Ferri Glycerophosphas, N.F.
- Ferri Hypophosphis, N.F.
- Mangani Citras Solubilis, N.F.
- Mangani Glycerophosphas Solubilis, N.F.
- Mangani Hypophosphis, N.F.
- Mangani Sulphas, N.F.
- Oleoresina Lupulini, N.F.
- Passiflora, N.F.
- Pulvis Antimonialis, N.F.
- Quininæ Tannas, U.S.P.
- Resina Scammonii, U.S.P.
- Sodii Benzosulphinidum, U.S.P.

### 0.25 Gm. (4 grs.)

- Aloe, U.S.P.
- Asafœtida, U.S.P.

## DOSES—Part II. Solids—continued

Betanaphthol, U.S.P.  
 Calcii Glycerophosphas, U.S.P.  
 Caryophyllus, U.S.P.  
 Cinnamomum Saigonicum, U.S.P.  
 Cinnamomum Zeylanicum, U.S.P.  
 Colchici Cormus, U.S.P.  
 Cupri Sulphas, U.S.P.  
 Extractum Cascarae Sagradæ, U.S.P.  
 Extractum Cimicifugæ, U.S.P.  
 Extractum Cinchonæ, N.F.  
 Extractum Colocynthidis Compositum, U.S.P.  
 Extractum Ergotæ, U.S.P.  
 Extractum Gentianæ, U.S.P.  
 Extractum Leptandræ, N.F.  
 Extractum Rhei, U.S.P.  
 Extractum Sumbul, U.S.P.  
 Ferri Carbonas Saccharatus, U.S.P.  
 Ferri et Ammonii Citras, U.S.P.  
 Ferri et Quininæ Citras, U.S.P.  
 Ferri Phosphas, U.S.P.  
 Ferri Pyrophosphas, N.F.  
 Glycyrrhizinum Ammoniatum, U.S.P.  
 Hexamethylenamina, U.S.P.  
 Hydrargyrum cum Creta, U.S.P.  
 Hyoscyamus, U.S.P.  
 Iodoformum, U.S.P.  
 Mangani Dioxidum Præcipitatum, U.S.P.  
 Massa Ferri Carbonatis, U.S.P.  
 Massa Hydrargyri, U.S.P.  
 Moschus, U.S.P.  
 Pelletierinæ Tannas, U.S.P.  
 Potassii Chloras, U.S.P.  
 Scammoniæ Radix, U.S.P.  
 Sodii Carbonas Monohydratus, U.S.P.  
 Sodii Glycerophosphas, U.S.P.  
 Sodii Phenolsulphonatas, U.S.P.  
 Suprarenalum Siccum, U.S.P.  
 Terpini Hydras, U.S.P.  
 Theophyllina, U.S.P.

### 0.3 Gm. (5 grs.)

Acetphenetidinum, U.S.P.  
 Alumini Chloridum, N.F.  
 Ammonii Carbonas, U.S.P.  
 Ammonii Chloridum, U.S.P.  
 Ammonii Iodidum, U.S.P.  
 Ammonii Phosphas, N.F.  
 Antipyrina, U.S.P.  
 Caffeina Citrata, U.S.P.  
 Ferri Lactas, N.F.  
 Paracoto, N.F.  
 Phenylis Salicylas, U.S.P.  
 Potassii Iodidum, U.S.P.  
 Pulsatilla, N.F.  
 Pulvis Acetanilidi Compositus, N.F.  
 Pulvis Aloes et Canellæ, N.F.  
 Pulvis Rhei et Magnesiæ Anisatus, N.F.  
 Sodii Iodidum, U.S.P.  
 Strontii Iodidum, U.S.P.

### 0.5 Gm. (8 grs.)

Acidum Benzoicum, U.S.P.  
 Acidum Boricum, U.S.P.  
 Acidum Citricum, U.S.P.  
 Acidum Phenylcinchoninicum, U.S.P.  
 Acidum Tannicum, U.S.P.  
 Acidum Tartaricum, U.S.P.  
 Alumen, U.S.P.  
 Ammonii Salicylas, U.S.P.  
 Ammonii Valeras, U.S.P.  
 Anisum, U.S.P.  
 Bismuthi Betanaphtholas, U.S.P.  
 Bismuthi Subcarbonas, U.S.P.  
 Bismuthi Subgallas, U.S.P.  
 Bismuthi Subnitras, U.S.P.  
 Bismuthi Subsalicylas, U.S.P.  
 Boldo, N.F.  
 Calcii Chloridum, U.S.P.  
 Calcii Hypophosphis, U.S.P.  
 Calcii Lactas, U.S.P.  
 Calcii Lactophosphas, N.F.  
 Caulophyllum, N.F.  
 Chloralum Hydratum, U.S.P.  
 Convallariæ Flores, N.F.  
 Convallariæ Radix, N.F.  
 Coriandrum, U.S.P.  
 Diastasum, U.S.P.  
 Euonymus, N.F.  
 Extractum Hydrastis, U.S.P.  
 Extractum Krameriae, N.F.  
 Extractum Viburni Prunifolii, U.S.P.  
 Galla, U.S.P.  
 Kino, U.S.P.  
 Lithii Carbonas, U.S.P.  
 Lithii Citras, U.S.P.  
 Lupulinum, N.F.  
 Macis, N.F.  
 Myrica, N.F.  
 Myristica, U.S.P.  
 Myrrha, U.S.P.  
 Oleoresina Cubebæ, U.S.P.  
 Pancreatinum, U.S.P.  
 Paraformaldehydum, U.S.P.  
 Pepsinum, U.S.P.  
 Piper, U.S.P.  
 Pix Liquida, U.S.P.  
 Potassii Hypophosphis, U.S.P.  
 Potassii Nitratas, U.S.P.  
 Pulvis Ipecacuanhae et Opii, U.S.P.  
 Quassia, U.S.P.

### 0.6 Gm. (10 grs.)

Agaricus, N.F.  
 Corydalis, N.F.  
 Extractum Ferri Pomatum, N.F.  
 Fucus, N.F.

### 0.75 Gm. (12 grs.)

Acidum Salicylicum, U.S.P.  
 Apocynum, N.F.  
 Sodii Boras, U.S.P.  
 Sulphonethylmethanum, U.S.P.  
 Sulphonmethanum, U.S.P.

## DOSES—Part II.

### 1 Gm. (15 grs.)

Acidum Gallicum, U.S.P.  
 Æthylis Carbamas, U.S.P.  
 Ammonii Benzoas, U.S.P.  
 Ammonii Bromidum, U.S.P.  
 Angelicas Fructus, N.F.  
 Aurantii Amari Cortex, U.S.P.  
 Baptisia, N.F.  
 Benzoinum, U.S.P.  
 Bryonia, N.F.  
 Calcii Bromidum, U.S.P.  
 Calcii Carbonas Præcipitatus,  
U.S.P.  
 Calcii Phosphas Præcipitatus, N.F.  
 Carbo Ligni, U.S.P.  
 Cardamomi Semen, U.S.P.  
 Carum, U.S.P.  
 Cascara Sagrada, U.S.P.  
 Chirata, N.F.  
 Cimicifuga, U.S.P.  
 Cinchona, U.S.P.  
 Cinchona Rubra, U.S.P.  
 Cocillana, N.F.  
 Creosoti Carbonas, U.S.P.  
 Creta Præparata, U.S.P.  
 Cubeba, U.S.P.  
 Cypripedium, N.F.  
 Echinacea, N.F.  
 Eriodictyon, U.S.P.  
 Extractum Hæmatoxyli, N.F.  
 Extracfum Jalapæ, N.F.  
 Extractum Taraxaci, U.S.P.  
 Fœniculum, U.S.P.  
 Frangula, U.S.P.  
 Galangal, N.F.  
 Gambir, U.S.P.  
 Gentiana, U.S.P.  
 Geranium, N.F.  
 Guaiacolis Carbonas, U.S.P.  
 Guaiacum, U.S.P.  
 Ipecacuanha, U.S.P.  
 Jalapa, U.S.P.  
 Kava, N.F.  
 Krameria, N.F.  
 Lactucarium, U.S.P.  
 Leptandra, N.F.  
 Lithii Bromidum, U.S.P.  
 Lithii Salicylas, N.F.  
 Massa Copainæ, N.F.  
 Menyanthes, N.F.  
 Papaveris Fructus, N.F.  
 Pepsinum Saccharatum, N.F.  
 Phytolacca, N.F. emetic; altera-  
tive, 0.1 Gm. (1½ grs.)  
 Pimenta, N.F.  
 Pimpinella, N.F.  
 Potassii Acetas, U.S.P.  
 Potassii Bicarbonas, U.S.P.  
 Potassii Bromidum, U.S.P.  
 Potassii Carbonas, U.S.P.  
 Potassii Citras, U.S.P.  
 Potassii Sulphas, N.F.  
 Pulvis Aromaticus, U.S.P.  
 Pulvis Ovetæ et Opii Aromaticus,  
N.F.  
 Pulvis Hydrargyri Chloridi Mitis  
et Jalapæ, N.F.

### Solids—continued

Pulvis Myricæ Compositus, N.F.  
 Quercus, N.F.  
 Quininæ et Ures Hydrochloridum,  
U.S.P. (hypodermic)  
 Rhamnus Cathartica, N.F.  
 Rheum, U.S.P.  
 Rhus Glabra, N.F.  
 Rubus, N.F.  
 Sabal, U.S.P.  
 Sal Carolinum Factitium, N.F..  
dry; cryst., 1.75 Gm. (26 grs.)  
 Sal Vichyanum Factitium, N.F.  
 Salicinum, U.S.P.  
 Scoparius, N.F.  
 Scutellaria, N.F.  
 Senega, U.S.P.  
 Serpentaria, U.S.P.  
 Sodii Acetas, U.S.P.  
 Sodii Benzoas, U.S.P.  
 Sodii Bicarbonas, U.S.P.  
 Sodii Bromidum, U.S.P.  
 Sodii Citras, U.S.P.  
 Sodii Hypophosphis, U.S.P.  
 Sodii Salicylas, U.S.P.  
 Sodii Sulphis Exsiccatus, U.S.P.  
 Sodii Thiosulphas, U.S.P.  
 Strontii Bromidum, U.S.P.  
 Strontii Salicylas, U.S.P.  
 Styrax, U.S.P.  
 Theobrominæ Sodio-Salicylas,  
U.S.P.  
 Thymol, U.S.P., anthelmintic; anti-  
septic, 0.125 Gm. (2 grs.)  
 Verbena, N.F.  
 Xanthoxyli Fructus, N.F.  
 Zedoaria, N.F.  
 Zinci Sulphas, U.S.P.  
 Zingiber, U.S.P.

**1.3 Gm. (20 grs.)**  
 Pulvis Gambir Compositus, N.F.  
 Species Laxativæ, N.F.

**1.5 Gm. (23 grs.)**  
 Sal Kissingense Factitium, N.F.

**2 Gm. (30 grs.)**  
 Absinthium, N.F.  
 Aletris, N.F.  
 Allium, N.F.  
 Althæa Folia, N.F.  
 Angelicas Radix, N.F.  
 Apii Fructus, N.F.  
 Aralia, N.F.  
 Asarum, N.F.  
 Asclepias, N.F.  
 Berberis, N.F.  
 Buchu, U.S.P.  
 Calumba, U.S.P.  
 Canella, N.F.  
 Cascarilla, N.F.  
 Centaurium, N.F.  
 Chimaphila, N.F.  
 Chionanthus, N.F.  
 Coptis, N.F.  
 Cornus, N.F.  
 Damiana, N.F.  
 Ergota, U.S.P.

## DOSES—Part II.

## Solids—continued

Eucalyptus, U.S.P.  
Eupatorium, N.F.  
Euphorbia Pilulifera, N.F.  
Fraxinus, N.F.  
Glycyrrhiza, U.S.P.  
Gossypii Cortex, N.F.  
Granatum, U.S.P.  
Grindelia, U.S.P.  
Guarana, U.S.P.  
Hamamelidis Folia, N.F.  
Helonias, N.F.  
Humulus, U.S.P.  
Hydrangea, N.F.  
Hydrastis, U.S.P.  
Inula, N.F.  
Iris Versicolor, N.F.  
Lappa, N.F.  
Magnesii Oxidum, U.S.P.  
Magnesii Oxidum Ponderosum,  
U.S.P.  
Mastiche, N.F.  
Oleoresina Aspidii, U.S.P.  
(single dose, once a day)  
Pareira, N.F.  
Petroselini Radix, N.F.  
Pilocarpus, U.S.P.  
Pinus Alba, N.F.  
Potassii Bitartras, U.S.P.  
Prunus Virginiana, U.S.P.  
Pulvis Cretæ Aromaticus, N.F.  
Pulvis Cretæ Compositus, U.S.P.  
Pulvis Jalapæ Compositus, U.S.P.  
Pulvis Kino et Opii Compositus,  
N.F.  
Pulvis Rhei Compositus, U.S.P.  
Pyrethrum, U.S.P.  
Sarsaparilla, U.S.P.  
Sodii Boro-Benzoas, N.F.  
Sodii Phosphas Exsiccatus, U.S.P.  
Stillingia, U.S.P.  
Sumbul, U.S.P.  
Thuja, N.F.  
Trillium, N.F.  
Uva Ursi, U.S.P.  
Valeriana, U.S.P.  
Viburnum Opulus, N.F.  
Viburnum Prunifolium, U.S.P.  
Xanthoxylum, U.S.P.

**3 Gm. (45 grs.)**  
Magnesii Carbonas, U.S.P.

**4 Gm. (60 grs.)**  
Aspidium, U.S.P.  
Aspidosperma, U.S.P.  
Caffeina Citrata Effervescent,  
U.S.P.  
Cassia Fistula, N.F.  
Castanea, N.F.  
Cataria, N.F.  
Condurango, N.F.  
Confectio Sennæ, N.F.  
Dioscorea, N.F.  
Drosera, N.F.  
Dulcamara, N.F.  
Farfara, N.F.  
Galega, N.F.  
Guaiaci Lignum, N.F.

Helianthemum, N.F.  
Juglans, N.F.  
Juniperus, N.F.  
Kola, N.F.  
Matico, N.F.  
Mentha Piperita, U.S.P.  
Mentha Viridis, U.S.P.  
Potassii Citras Effervescent, U.S.P.  
Pulvis Glycyrrhizæ Compositus,  
U.S.P.  
Rumex, N.F.  
Sal Vichyanum Factitium  
Effervescent, N.F.  
Sambucus, N.F.  
Senecio, N.F.  
Senna, U.S.P.  
Sodii Phosphas, U.S.P.  
Solanum, N.F.  
Species Pectorales, N.F.  
Spigelia, U.S.P.  
Sulphur Lotum, U.S.P.  
Sulphur Præcipitatum, U.S.P.  
Sulphur Sublimatum, U.S.P.  
Thymus, N.F.  
Trifolium, N.F.  
Verbasci Folia, N.F.  
Zea, N.F.

### 5.5 Gm. (80 grs.)

Sal Kissingense Factitium  
Effervescent, N.F.

### 6 Gm. (90 grs.)

Sal Carolinum Factitium  
Effervescent, N.F.  
Sal Potassii Bromidi Effervescent,  
N.F.  
Sal Potassii Bromidi Effervescent  
Compositus, N.F.  
Sal Vichyanum Factitium Effer-  
vescens cum Lithio, N.F.

### 8 Gm. (120 grs.)

Sal Lithii Citratis Effervescent,  
N.F.  
Triticum, U.S.P.  
Verbasci Flores, N.F.

### 10 Gm. (150 grs.)

Agar, U.S.P.  
Potassii et Sodii Tartras, U.S.P.  
Sassafras, U.S.P.  
Sinapis Alba, U.S.P.  
Sinapis Nigra, U.S.P.  
Sodii Phosphas Effervescent,  
U.S.P.  
Taraxacum, U.S.P.

### 15 Gm. (240 grs.)

Brayera, N.F.  
Chondrus, U.S.P.  
Extractum Malti, U.S.P.  
Magnesii Chloridum, N.F.  
Magnesii Sulphas, U.S.P.  
Manna, U.S.P.  
Matricaria, U.S.P.  
Sodii Chloridum, U.S.P.  
Sodii Sulphas, U.S.P.  
Tamarindus, N.F.

## DOSES—Part II. Solids—continued

### 30 Gm. (480 grs.)

Pepo, U.S.P.

#### 1 pill

- Pilulae ad Prandium, N.F.
- Pilulae Aloes et Asafœtidæ, N.F.
- Pilulae Aloes et Podophylli Compositæ, N.F.
- Pilulae Aloes, Hydrargyri et Podophylli, N.F.
- Pilulae Aloes, Hydrargyri et Scammonii Compositæ, N.F.
- Pilulae Aloini Compositæ, N.F.
- Pilulae Aloini, Strychninæ et Belladonnæ, N.F.
- Pilulae Aloini, Strychninæ et Belladonnæ Compositæ, N.F.
- Pilulae Antidyspepticæ, N.F.
- Pilulae Antimonii Compositæ, N.F.
- Pilulae Antiperiodicæ, N.F.
- Pilulae Antiperiodicæ sine Aloe, N.F.
- Pilulae Colocynthidis Compositæ, N.F.
- Pilulae Colocynthidis et Hyoscyami, N.F.
- Pilulae Colocynthidis et Podophylli, N.F.
- Pilulae Digitalis, Scillæ et Hydrargyri, N.F.
- Pilulae Ferri, Quininæ, Aloes et Nucis Vomicæ, N.F.
- Pilulae Ferri, Quininæ, Strychninæ et Arseni Fortiores, N.F.
- Pilulae Ferri, Quininæ, Strychninæ et Arseni Mites, N.F.
- Pilulae Glycerylis Nitratis, N.F.
- Pilulae Laxativæ Post Partum, N.F.

- Pilulae Opii, Digitalis et Quininæ, N.F.
- Pilulae Opii et Camphoræ, N.F.
- Pilulae Opii et Plumbi, N.F.
- Pilulae Phosphori, U.S.P.
- Pilulae Rhei, N.F.

#### 2 pills

- Pilulae Aloes, U.S.P.
- Pilulae Aloes et Ferri, N.F.
- Pilulae Aloes et Mastiches, N.F.
- Pilulae Aloes et Myrrhæ, N.F.
- Pilulae Asafœtidæ, U.S.P.
- Pilulae Catharticæ Compositæ, U.S.P.
- Pilulae Catharticæ Vegetabilis, N.F.
- Pilulae Ferri Carbonatis, U.S.P.
- Pilulae Ferri Iodidi, U.S.P.
- Pilulae Laxativæ Compositæ, N.F.
- Pilulae Rhei Compositæ, U.S.P.

#### 1 set of 2 powders

- Pulvis Effervescens Compositus, U.S.P.

#### 1 troche

- Trochisci Carbonis Ligni, N.F.
- Trochisci Gambir, N.F.
- Trochisci Menthae Piperitæ, N.F.
- Trochisci Phenolphthaleini, N.F.
- Trochisci Quininæ Tannatis, N.F.
- Trochisci Santonini, N.F.
- Trochisci Santonini Compositi, N.F.
- Trochisci Sulphuris et Potassii Bitartratis, N.F.
- Trochisci Ulmi, N.F.

Collection of original packages of American drugs.

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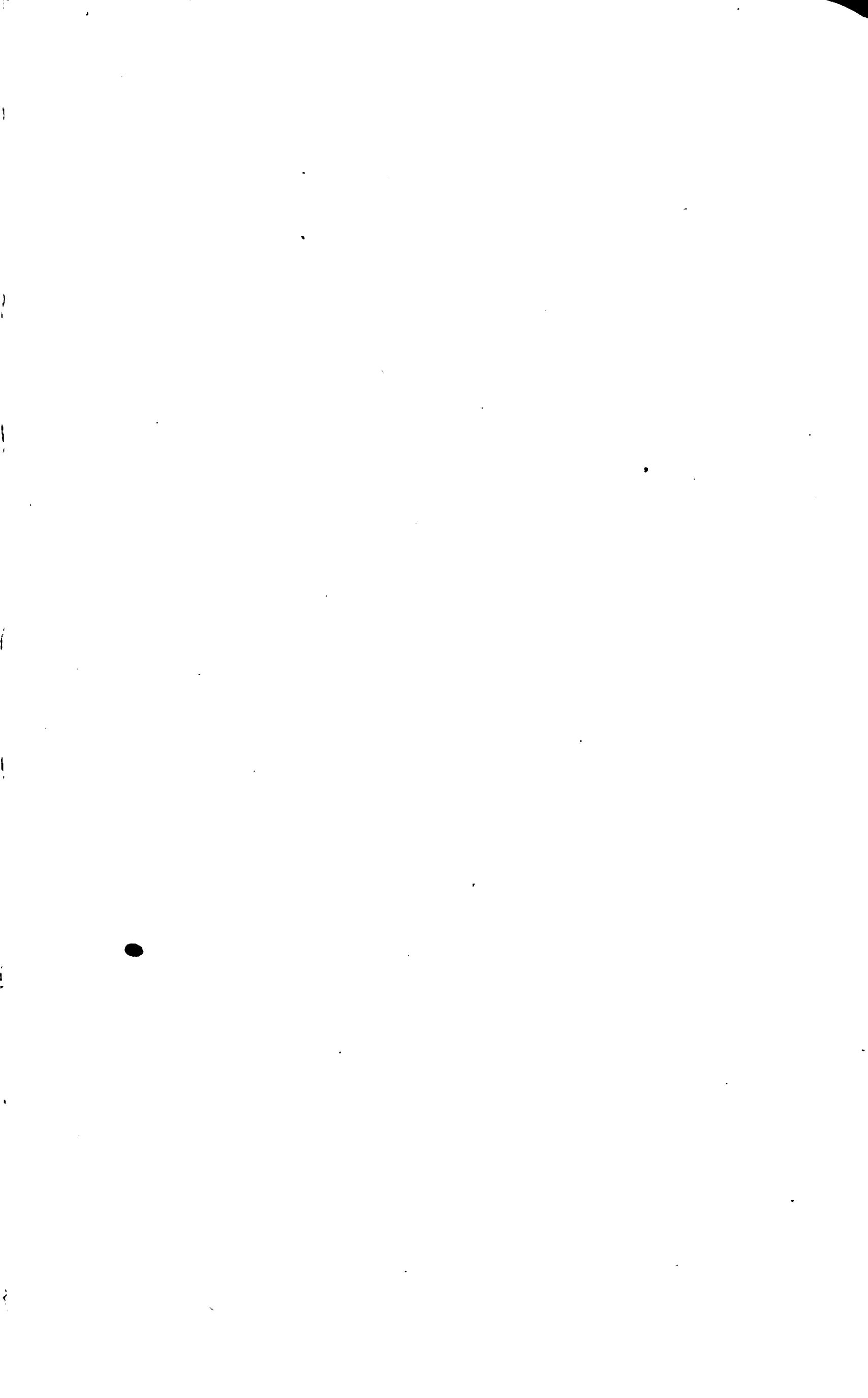
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## SUPERIOR BOTANICALS

**A**LL the botanical and other crude drugs used in the Squibb Laboratories are obtained from the best known sources and only those of first quality are employed. Shipments are accepted by us only after they have been examined and passed by our expert pharmacognosists, and by our Control Laboratories where they are tested chemically; and in many instances they are subjected to additional tests by our Physiological Laboratories.

Each drug is first examined macroscopically and microscopically, to establish its identity. Then it is thoroughly garbled to remove any foreign drugs or parts of the plant which may have been included in the harvesting and which are not included by the official definition. For example: if the bark of the root is the part which the Pharmacopœia directs to be used, we exclude all bark of the stem and all undue quantities of woody material. Likewise, when leaves are officially specified, stems, etc., must not be present.

Also inspection must show plainly that the drug, after collecting, was promptly and carefully dried and kept in a clean place; and there must be no evidence of fermentation or of dirt accumulated during the drying. Fermentation caused by packing drugs before they are perfectly dry is one of the chief causes of change in the active principles.

Drugs for which the Pharmacopœia prescribes a definite alkaloidal strength, are assayed carefully to make sure they are at least of that strength; and in those instances where biological assays are officially required or recommended, the drugs are subjected to the proper tests at our Physiological Laboratories. Furthermore, we also physiologically test and standardize our ergot preparations, as well as a number of other potent drugs for which there is no chemical assay established, but which can be tested biologically.

In consequence of this care, the botanical drugs sold by E. R. Squibb & Sons or elaborated into the various Squibb official preparations, are of the highest quality, hence therapeutically active and dependable.

## DEPENDABLE ERGOT PRODUCTS

THE house of E. R. Squibb & Sons has for a long time been recognized as the first producer of ergot preparations of exceptional quality and absolute reliability. What Dr. Stearns was to the introductory therapy of ergot, Dr. Squibb was to its pharmacy ; he studied it, experimented with it unceasingly, and established the name "Squibb's Ergot" firmly in medicine.

Medicinal ergot is a poisonous, parasitic fungus growing on rye. Its value depends very largely upon cautious selection, thorough cleansing, careful preservation, correct manipulation until all its essential principles are extracted, and proper packing of the finished product. *Spanish* rye ergot is far superior to all other kinds, as the peculiar atmospheric conditions of the Spanish peninsula favor a more mature and otherwise better growth of the fungus. Squibb's Ergot preparations are made from this Spanish rye ergot exclusively. Each year a fresh lot is secured, and upon receipt of an importation it is subjected to a very thorough process of cleansing by which all extraneous and inert matter is removed. Then as soon as practicable this clean ergot is ground and immediately extracted by the Squibb repercolation process, and made up into those preparations which are recognized as safe and efficient for administration.

Finally, Squibb's Ergot preparations are carefully tested physiologically according to the method recommended by Drs. Edmunds and Hale (Hygienic Lab. Bull. No. 76), and admirably conform to their standards. Particular mention may be made of Squibb's *Sterile Ergot*, an alcohol-free preparation for hypodermic or intramuscular injection, physiologically standardized so that each mil (Cc.) represents 2 Gm. of best Spanish Ergot.

Consequently, the use of Squibb's Ergot in any of its forms is in no sense a matter of clinical experiment, so often attended with serious risk, but the application of a proven remedial agent carefully prepared, tested and standardized.

## TRUSTWORTHY DIGITALIS

THE Squibb Laboratories make use of only the choicest and most carefully cured Digitalis leaves. This is evidenced by the beautiful green color of the Squibb fluidextract and tinctures. Each shipment of leaves is carefully examined by our expert pharmacognosists, and its freedom from admixture with foreign leaves and other adulterants is assured. After the leaves have passed this examination, a liberal sample of it is made into the official tincture and is then tested physiologically according to the method outlined in the U. S. P. If the finished drug does not admirably come up to the official standard in every respect, the entire lot of leaves is rejected. As a rule, the leaves accepted by the Squibb Laboratories are much more active than the Pharmacopœia demands and the preparations made from them are carefully adjusted to a potency of 25 per cent. above the official standard. In this way full activity and uniformity of strength are assured for such an important product as Digitalis.

A *Fat-Free Tincture Digitalis* is supposed to be borne better by the stomach than is the ordinary tincture, therefore the Squibb Laboratories make a fat-free tincture, which should be specified if desired. It is prepared from leaves from which the fat has been removed by a method which does not extract or otherwise interfere with any of the proximate principles. It is of the same strength as the U. S. P. tincture, and is physiologically tested by the Hatcher "cat method" and adjusted so that each mil (Cc.) represents one cat unit (Hatcher's standard).

*Whole, Ground, or Powdered Digitalis* leaves, and a Soft and a Powdered Extract Digitalis, are also offered under the Squibb label.

## WELL-SEASONED CASCARA

CASCARA Sagrada (*Rhamnus Purshiana*) was discovered in Montana, on the banks of a tributary of the Columbia River, about 1805, by the members of the first North American transcontinental exploring expedition under the command of Lewis and Clark. It was also found by the latter in what is now known as Oregon and Washington states. The plant, along with a number of other unknown drugs collected on the journey, was sent to Frederick Pursh, a German botanist, of Philadelphia, for botanical study; hence the name, "Rhamnus Purshiana."

Fresh Cascara Sagrada contains a *ferment* which produces unpleasant results when the drug is administered, while the *seasoned* bark, that is to say, such as has been kept a year or more before making up, owes its valuable properties as a laxative, *free from griping*, to the fact that the ferment has been exhausted by standing. The Squibb Laboratories do not use any cascara bark unless it has been seasoned for *more than a year*; and of such only the choicest bark is employed.

This care insures a maximum of efficacy and a freedom from undesirable by-effects to the various preparations of cascara which are marketed under the Squibb label. These include: Extract, Fluidextract, Aromatic Fluidextract, and Fluid Cascara Aromatic Non-Alcoholic. This non-alcoholic product is identical with Aromatic Fluidextract Cascara U. S. P. in strength and flavor, but the alcohol has been omitted without sacrificing the keeping qualities of the preparation. It has the therapeutic advantage of eliminating any alcohol effect, a result especially desirable in the case of children. It can unhesitatingly be recommended in preference to the official preparations, and it is offered at a lower price because of the absence of alcohol.

## PURE SPICES

THE purity of spices is a matter of as great importance as is the quality of the food to which they are added. In the popular mind the sole value of spices lies in their property of imparting an agreeable flavor to food. Aside, however, from this well-known virtue, spices are of great dietetic importance, and their selection with the view of obtaining them of full strength and of a high standard of quality is deserving of careful consideration.

However, even to-day spices are adulterated, or low grades and exhausted residues are reinforced by good ones, to be offered as desirable condiments.

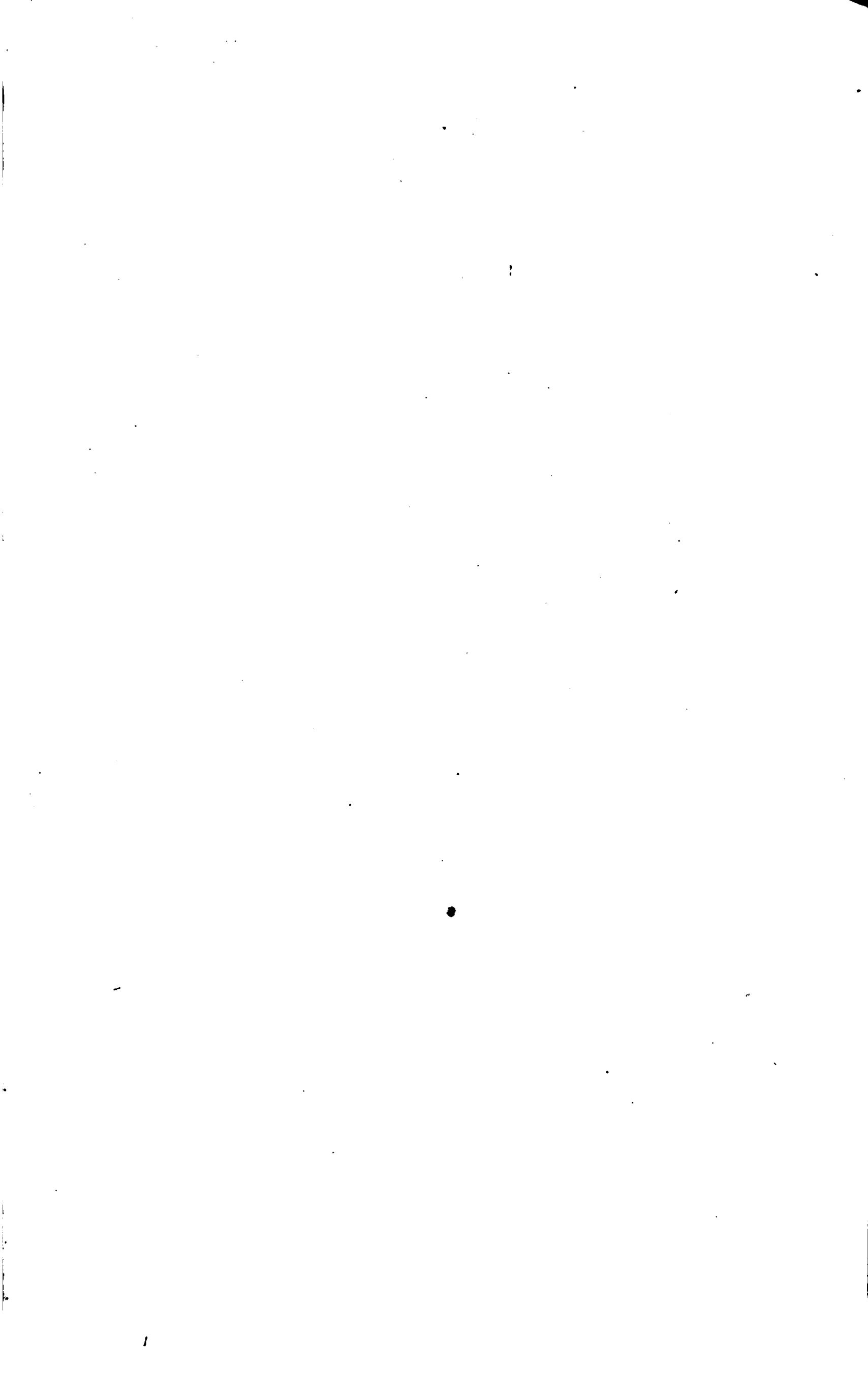
Appreciating this condition, the House of E. R. Squibb & Sons supplies a line of spices which are absolutely pure and of highest quality. These can unhesitatingly be recommended to all who desire condiments of distinctive quality and such as are free from sophistication of any kind. The whole spices are selected with the greatest care, assayed to make sure they come up to the high standards set by the Squibb Laboratories, and then immediately ground, great care being taken to avoid volatilization of the essential oils.

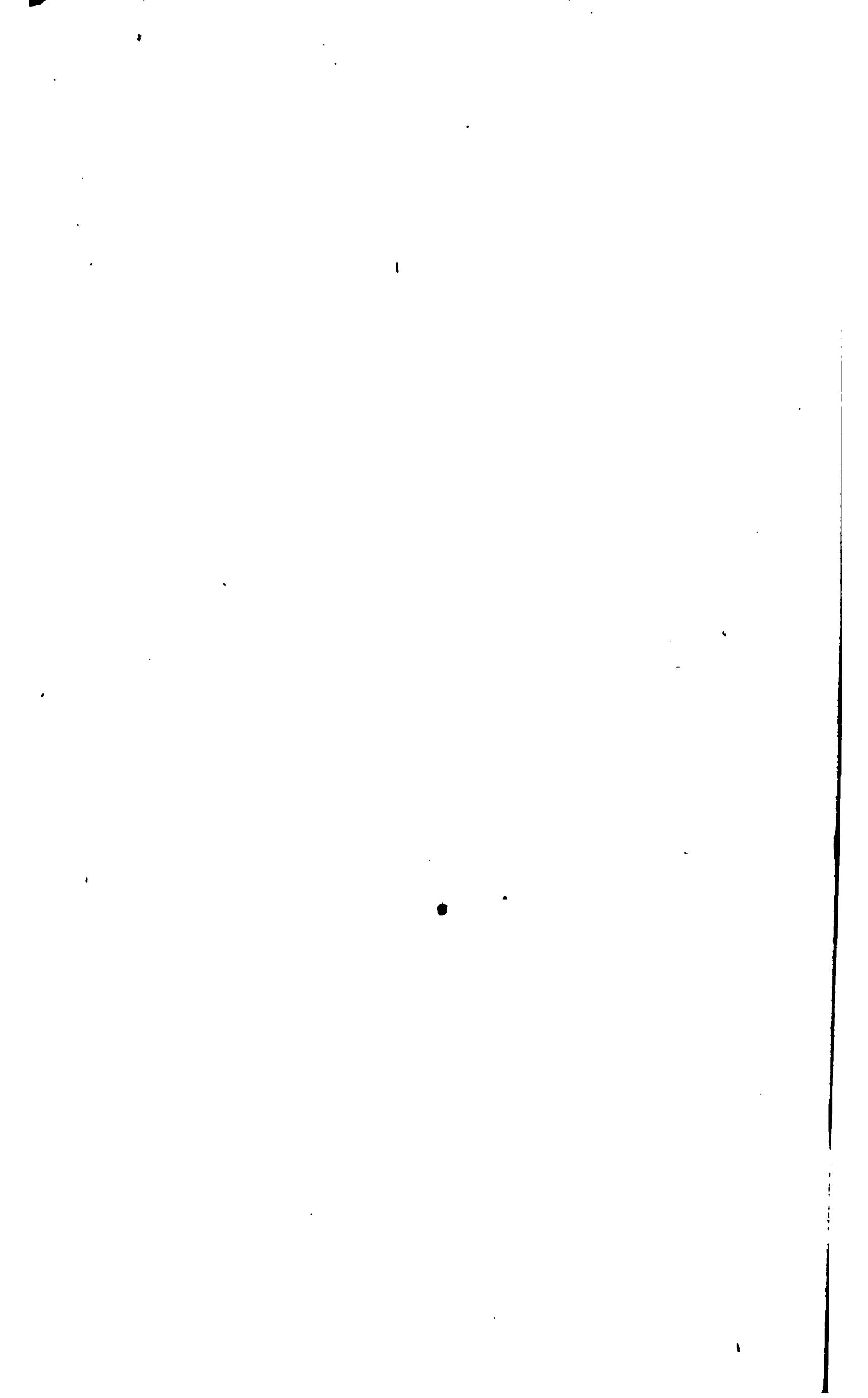
Inasmuch as these Squibb Spices are pure and consequently of exceptional strength, they require to be used in quantities much smaller than ordinary. Therefore, they are economical. A trial is convincing of their excellence.

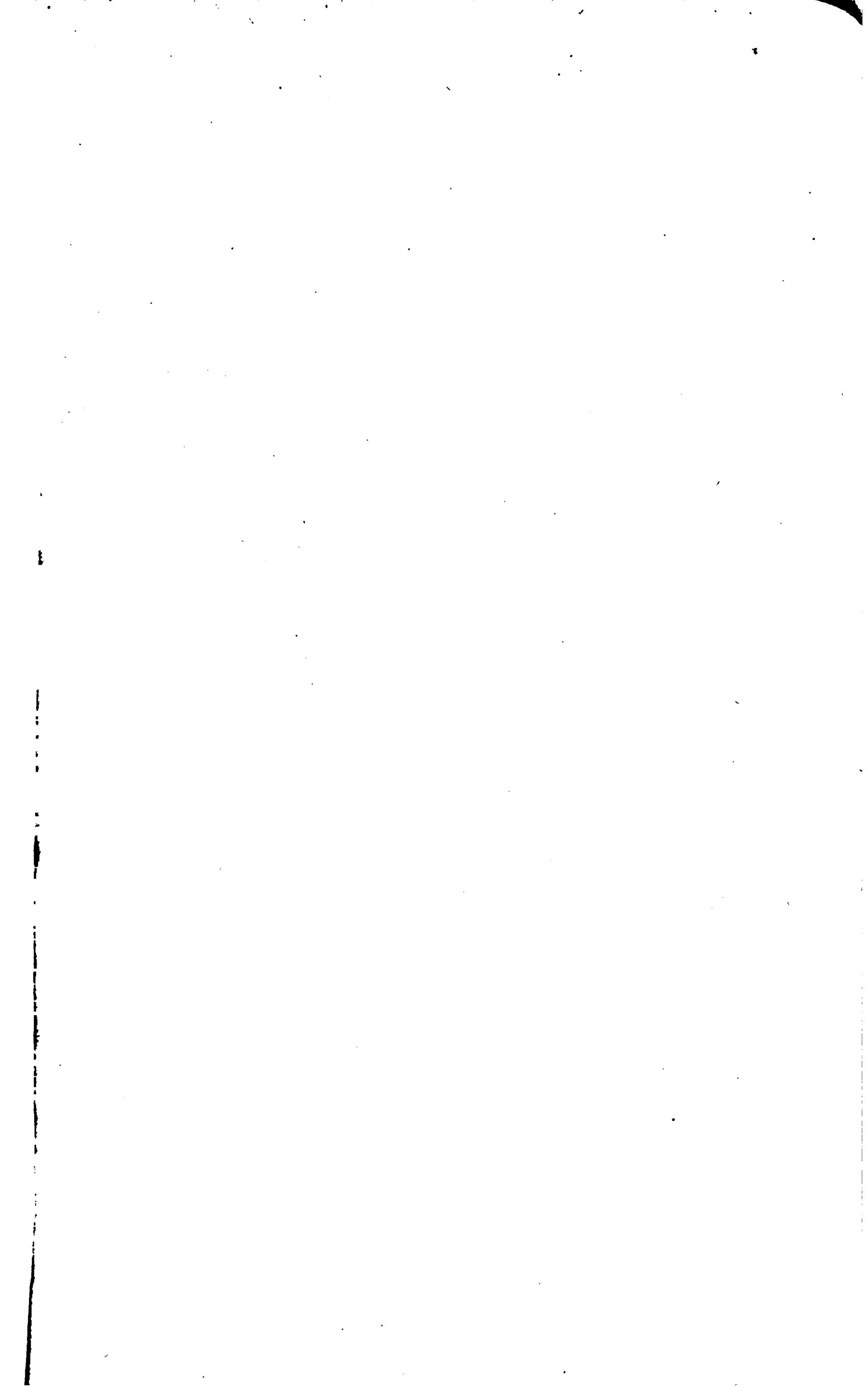
The list comprises: Allspice, Cinnamon, Cloves, Ginger, Mace, Mustard (English), Nutmeg, Paprika, and Pepper (black, red and white). These spices are put up in air-tight, sifter-top cans holding  $\frac{1}{4}$  lb., 2 ozs., and 1 oz. respectively, convenient for table use. They are sold only through druggists; they are not obtainable from grocers.

For pharmaceutical purposes the Squibb Pure Spices are also supplied in 1-lb. cans and in bulk packages.











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